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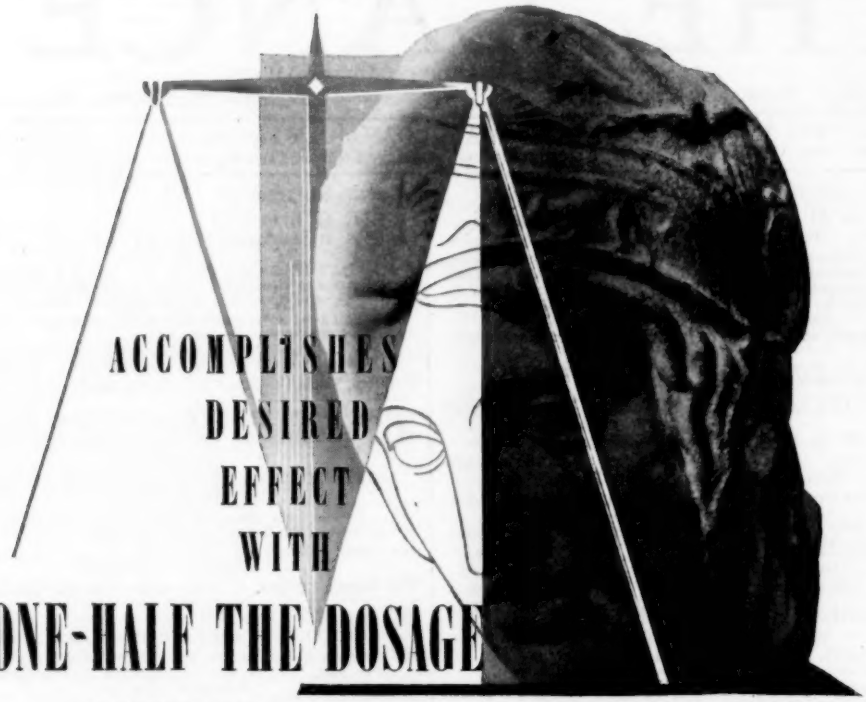

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I—The Pulse

IT was exactly half a century ago that Sir William Broadbent delivered the Croonian lectures. In his choice of subject—The Pulse—I imagine that he must have been influenced by the trend of thought at the time. Marey's (1881) classical work "Le circulation du sang, à l'état physiologique et dans les maladies" had just been published, and the sphygmographs of Marey and Dudgeon had reawakened interest in the study of the pulse.

Dudgeon (1882), with his delightful sense of humour, refers to the subject in the following words :—

"The physician of old made his diagnosis chiefly by observation of the pulse and tongue. But, as the tongue could be rapidly inspected, and anyone could judge of its foulness or cleanness as well as himself, he concentrated his attention mainly on the pulse, in the feeling of which there was always scope for affecting the possession of peculiar skill and insight. To the uninitiated who regarded the doctor as the depositary of occult knowledge, and who received his dicta as though they were oracles, there was something very imposing in his method of pulse-palpation. The fingers of the right hand daintily grasping the patient's wrist, while the doctor's eyes were riveted on the loud-ticking gold chronometer he held in his left hand, his head gravely nodding the while synchronously with the arterial pulsations—all this formed a picture calculated to inspire beholders with reference and awe."

Although palpation of the pulse is no longer so spectacular as of old, the information to be derived therefrom is none the less valuable.

It is remarkable how the invention of a new instrument may determine the particular sector of the battle-front of knowledge selected for attack. In no department of medicine is this more evident than in cardiology. Laennec's invention of the stethoscope, in 1819, focused attention on auscultation, with the result that during the remainder of the nineteenth century cardiac murmurs and valvular lesions occupied a position of great prominence in cardiology—in fact, they took precedence over other manifestations of heart disease which to-day we consider to be of more fundamental significance.

The sphygmograph was popularised for clinical use by Marey in 1860. This instrument paved the way for an offensive on another sector of the front. It opened up new possibilities of investigating the cardiac mechanism, and thereby diverted the attention of clinicians from morbid anatomy to morbid physiology. The pathology of the circulation began to be studied in the ward as well as in the post-mortem room.

It was in the transition period between these two epochs that Broadbent (1890) delivered his Croonian lectures on the pulse. The monograph in which he amplified those lectures is a valuable record of the state of knowledge at that time; and, before attempting to survey the present position, it is interesting to look back and to see what progress has been made in the last fifty years. Where was the front line in Broadbent's time, and in what directions has it been advanced?

During this period progress has been made chiefly in two directions. By the use of instrumental methods we have learnt much about irregular heart action and about blood pressure. With the sphygmograph it was only possible to reconnoitre the stronghold of the cardiac arrhythmias, and no great advance was made in that sector until the introduction of Mackenzie's polygraph in 1902. In fact it was not until Einthoven invented the string galvanometer that the position was finally consolidated.

Graphic records of the blood pressure were first obtained by Carl Ludwig in 1847, more than a century having elapsed since the pioneer experiments of Stephen Hales. This method was first applied to man, in 1880, by von Basch, whose sphygmomanometer was improved by Riva Rocci in 1897. Lastly, the auscultatory method of estimating the diastolic pressure was described by Korotkow in 1905.

Oscillometric methods (Erlanger 1904, Gallavardin 1920, Pachon 1909) for the estimation of blood pressure have been extensively used on the Continent and in America but have never found much favour in this country. In clinical medicine instrumental methods have an uphill fight to win their spurs. Writing in 1902, five years after the introduction of Riva Rocci's sphygmomanometer, even Mackenzie says: "The trained finger is as yet the best guide we have in judging the pressure within an artery."

To-day, one might summarise the clinical data derived from pulse palpation under the following headings: (1) frequency; (2) rhythm; (3) tension and character; (4) condition of the arterial wall.

Let us now consider these four aspects of the subject.

Pulse Frequency

To those types of tachycardia and bradycardia which are due to an abnormal heart rhythm I shall refer presently. For the moment I will confine my attention to variations in pulse frequency due to speeding up or slowing down of the rate of impulse production in the normal pacemaker (the sino-auricular node). These may be either physiological or pathological and it is not always easy to define with certainty the thin and wavering line which separates sickness from health.

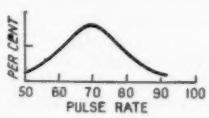

FIG. 1.—Normal frequency curve. The values are purely hypothetical and are not based on statistical results.

In all physical attributes, no matter whether we are considering the pulse-rate, the body build, the number of corpuscles in the blood, the basal metabolic level, or the blood-urea, there is a wide range of variation amongst normal healthy individuals. For any one of these attributes we can plot what statisticians (Feldman 1923) call a "normal frequency curve" (Fig. 1). The pulse-rate in the majority of healthy adults is in the neighbourhood of 70 per minute: a few people have pulse-rates under 60 or over 80: while occasionally one meets with an individual whose resting pulse-rate is under 50 or over 90, and who nevertheless appears to be in perfect health.

* The Lumleian lectures delivered at the Royal College of Physicians on March 9th and 11th, 1937. Lecture II will appear in a subsequent issue.

BRADYCARDIA

A slow heart-rate is an advantage; for bradycardia makes it possible to double or even to treble the cardiac output, without an excessive increase in heart-rate. Athletes who indulge in those forms of sport involving severe and prolonged physical exertion usually have bradycardia. In a group of 28 Marathon runners, whom we (Bramwell and Ellis) examined at the Olympic Games in Amsterdam in 1928, the average heart-rate was 58; whereas, in a corresponding group of sprinters, it was 66. Of the 28 Marathon runners 4 had heart-rates under 50, while only 9 had heart-rates over 60.

The same is true of the animal kingdom (Clark 1927). Consider for example the hare and the rabbit. The hare is an exceedingly athletic animal, and has a pulse-rate of about 70. Its cousin the rabbit, a sedentary creature, has a pulse-rate of over 200. The difference in rate in this case is due to the influence of the vagus. After section of this nerve, the rabbit's heart-rate was found to rise to 321 and that of the hare to 264. To compensate for the difference in pulse-rate, relative to its body-weight, the hare's heart is three times as large as the rabbit's.

Dr. C. M. Billington (1937), who has had medical charge of the Cambridge crew during the past four years and had previously collaborated in this work

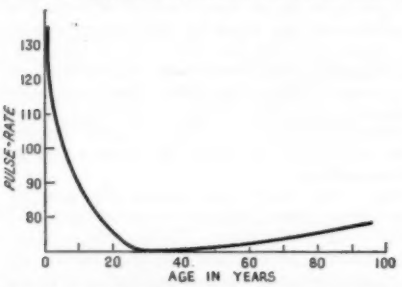

FIG. 2.—Relation of pulse-rate to age in 2521 normal subjects. Base line 70 beats.

with Dr. C. H. S. Taylor, informs me that he finds that, in the case of the heavy-weights in the boat, the pulse-rate slows about 12 beats per minute in the course of training. This is more than one would have expected, considering that, even at the beginning of training, the men are fairly fit.

Pathologically, sinus bradycardia may be associated with hepatic disorders, with raised intracranial pressure, and with various other conditions. It is a common aftermath of febrile infections such as influenza.

TACHYCARDIA

The causes of tachycardia with normal rhythm are more numerous. There are the diseases of the heart itself, such as acute rheumatic carditis, pulmonary diseases such as pneumonia and pulmonary tuberculosis, certain other infections, both during the acute stage and during convalescence, focal sepsis and other conditions which give rise to neurocirculatory asthenia, the anxiety neuroses, and thyrotoxicosis. In addition to these and other pathological conditions, sinus tachycardia due to reflex nervous and emotional causes is common in normal healthy individuals.

In the febrile diseases the increased heart-rate is proportional to the increased

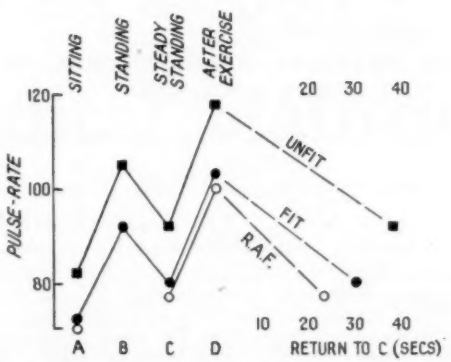

FIG. 3.—The pulse-response test in candidates classified as fit and unfit for service as pilots in R.A.F., the lowest curve being the average in 2413 fit pilots.

metabolism. There are, however, certain notable exceptions, as for example diseases of the enteric group.

AGE

Throughout childhood and adolescence the pulse-rate steadily falls, while during the later period of life it tends to rise slightly. Fig. 2, which is taken from figures published by Tigerstedt (quoted by Mackenzie 1902), illustrates the relation of heart-rate to age in a series of 2521 normal healthy individuals. When I plotted this curve I was surprised to find that the transition from slowing to quickening does not occur until the twenty-fifth year. One was familiar with the fact that young men are less capable than their seniors of enduring severe and prolonged physical exertion. At the Olympic Games in 1928 only one man under 25 years of age distinguished himself in the Marathon. The same is true of other feats demanding great endurance, as for example Arctic exploring. In Nansen's expedition to the North Pole (Nansen 1897) the average age of his twelve companions was 33; and all were over 25. I had always imagined that this defect in younger men was due to lack of nervous rather than physical stamina; but the figures which I have put before you suggest that the cardio-vascular mechanism does not attain its greatest efficiency until about the twenty-fifth year.

SIZE

Small animals have a higher heart-rate than large animals. In fact, if one excludes the athletic species,

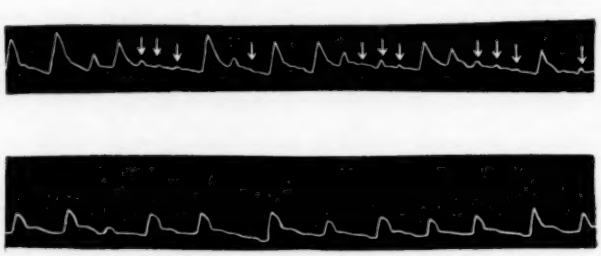

FIG. 4.—Sphygmograms from a case of auricular fibrillation. Upper before, lower after treatment.

(Figs. 4–8, 11, 12, 16, and 27 are reproduced from the author's book "Heart Disease," published by Edward Arnold and Co.)

the heart-rate varies inversely with body-weight. This is shown in Table I.

TABLE I

Heart-rate in Mammals (Clark 1927)

	Heart-rate.	Body-weight (grammes).
Mouse	670	25
Rat	420	200
Rabbit	205	2,000
Dog (small)	120	5,000
,, (large)	85	30,000
Horse	38	450,000
Ox	40	500,000
Elephant	48	3,000,000

You will notice that the heart-rate of the elephant is quicker than that of the ox. There appears to be a limit to bradycardia. If it were not so one would be tempted to visualise an animal so large that its heart would never beat at all!

RESPONSE TO EXERCISE

As a means of assessing physical fitness the response of the pulse to exercise has been extensively employed. It should, however, be used circumspectly. In testing soldiers during the war, Lewis (1918) found that subjective symptoms such as dyspnœa and dizziness, following exercise, were of greater significance than variations in heart-rate.

In reference to rowing blues, while recognising the value of physical efficiency tests, Billington (1936) insists that the only way of forecasting the ability of the individual to stand the strain of the boat-race course is to consider his past racing achievements. He says that, judged by the Dryer tests and by other American methods of finding a factor of fitness, none of the men who have rowed for Cambridge during the last four years would have been passed as fit!

Treadgold and Burton (1932) likewise found that the more elaborate methods of assessing cardiovascular efficiency did not show any advantage over the simpler methods employed at the Central Medical Establishment of the Royal Air Force.

They base their assessment on the blood-pressure readings and the two following tests:—

The pulse response test.—This consists of taking (1) the steady sitting pulse-rate; (2) the pulse-rate on assumption of the erect posture, the increase in frequency indicating the efficiency of adjustment to change of position; (3) the steady standing rate; (4) the pulse-rate immediately after a standard exercise which consisted of placing one foot on a chair and rising on to it 5 times in 15 seconds; (5) the time required for the pulse to return to the steady standing rate. This test could, I think, be improved by varying the height of the chair in accordance with the stature of the candidate.

The upper two curves in Fig. 3 show the type of response obtained in candidates classified as fit and unfit for service as pilots in the Royal Air Force. The bottom curve shows the average figures in a group of 2413 fit pilots submitted to this test. In this group the initial standing pulse-rate was not taken. Consequently it is impossible to complete this part of the diagram.

The 40 millimetre test.—In this test the subject blows up a column of mercury in a U-tube manometer to a pressure of 40 mm., and holds it there as long as possible. The pulse is recorded in 5-second periods, the steady sitting pulse, before the commencement of the test, being taken as the basal figure.

The significant factor is the behaviour of the pulse rather than the duration of the test. A healthy young adult can usually hold the pressure at 40 mm. for over 60 sec. A pulse that does not rise by more than 12, or at the most 24, beats per minute, has proved, in the Royal Air Force, to be a valuable indication of cardiovascular efficiency.

Rhythm of the Pulse

The problem of the cardiac arrhythmias has received so much publicity during the past thirty years that I need only refer to it very briefly.

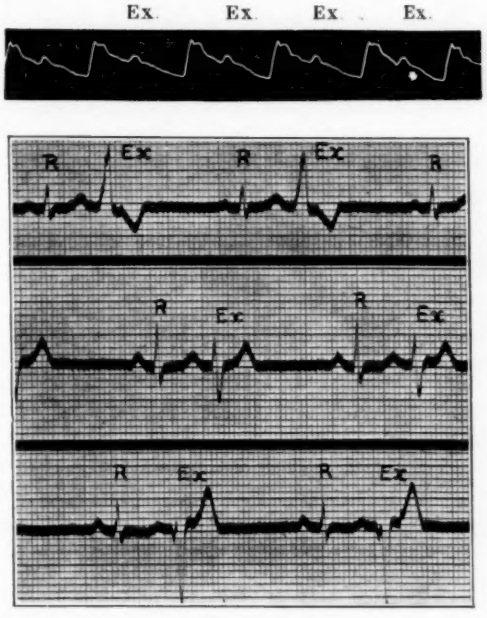

FIG. 5.—Sphygmogram and electrocardiogram showing bigeminal heart action; each normal beat is followed by an extrasystole. The small wave (Ex.) on the downstroke of the sphygmogram is due to an extrasystole.

AURICULAR FIBRILLATION

In 1909 Lewis put the finishing touches to Mackenzie's fundamental work by proving that "delirium cordis" in the human subject was nothing more nor less than the auricular fibrillation long familiar in animal experiments. In Broadbent's time it was generally believed that this peculiar irregularity of the pulse was the result of heart failure. Mackenzie's observations showed that it is the other way about. It is not the heart failure which leads to fibrillation, but the transition from normal rhythm to fibrillation which is often the determining factor in precipitating the onset of heart failure.

To the clinical researches of Mackenzie we owe our knowledge of the rational use of digitalis in the treatment of auricular fibrillation (Fig. 4). This marks one of the greatest therapeutic achievements in cardiology in the past fifty years. The use of quinidine in restoring normal rhythm, though of less practical importance, affords a very remarkable example of a drug producing a radical change in the mechanism of an organ.

We are largely indebted to Ritchie (1914) for the elucidation of the allied condition, auricular flutter.

EXTRASYSTOLES

With regard to extrasystoles the position is less satisfactory. Whereas occasional intermissions of

the pulse due to extrasystoles appear to be of no pathological significance, the problem of bigeminal heart action in which every normal beat is followed by an extrasystole (Fig. 5) remains unsolved. From current text-books one would gather the impression that this disorder occurs most commonly in patients

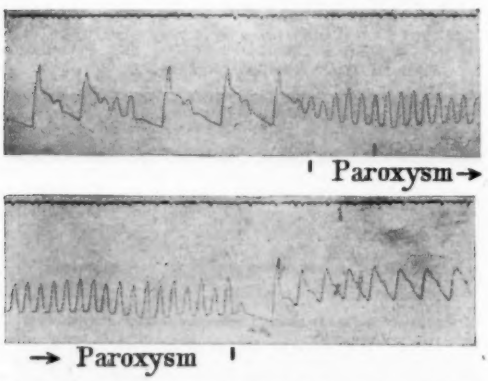

FIG. 6.—A paroxysm of tachycardia followed by a period of normal rhythm and preceded by normal beats mingled with extrasystoles.

with auricular fibrillation who are suffering from digitalis intoxication; but, on analysing a series of 42 consecutive cases of bigeminal action, seen recently in consulting practice, I was surprised to find that the majority were not fibrillators but had normal rhythm. Bigeminal heart action is a sure sign of myocardial damage; but, from the aspect of both prognosis and treatment, this disorder calls for further investigation.

Extrasystoles may arise in the ventricle, in the auricle, or in the junctional tissues. Supraventricular extrasystoles are a not infrequent precursor of auricular fibrillation and of paroxysmal tachycardia. For that reason they are generally of more significance than the ventricular type. The two varieties can only be distinguished with certainty by an electrocardiogram.

Closely related to the extrasystole is paroxysmal tachycardia. This condition is illustrated by the sphygmogram reproduced in Fig. 6, in which a short paroxysm of nodal tachycardia is followed by a spell of normal rhythm and preceded by extrasystoles, occurring sometimes singly, sometimes in groups of two or more. Fig. 7 was taken from the same patient as Fig. 6. That the impulses which give rise to the beats constituting the paroxysm develop in response to stimuli arising from the same focus as those which produce the extrasystoles is shown by the similarity in form of the electrocardiograms.

No satisfactory hypothesis has yet been formulated to account for the incidence of attacks of paroxysmal tachycardia, though sometimes they appear to be associated with flatulent dyspepsia. The only drug which is of any value in the treatment of this disorder is quinidine.

HEART-BLOCK

Gaskell produced heart-block experimentally in the tortoise in 1883, the clinical condition having been clearly described by Galabin in 1875. Electrocardiography has done much to elucidate the mechanism of this disorder. It shows very clearly (Fig. 8) the lengthening of the conduction time in cycles preceding a ventricular lapse.

Acquired complete heart-block usually manifests itself by pronounced bradycardia, but cases of congenital origin often escape recognition, since in them the ventricular rate may be in the neighbourhood of 70 per minute. Without the aid of graphic records it is not possible to distinguish between auriculo-ventricular and sino-auricular block.

SINUS ARRHYTHMIA

This disorder is believed to be due to rhythmic variations in vagal tone. Mackenzie emphasised the fact that, in young persons, this type of arrhythmia is of no pathological significance. It may however occur as one of the manifestations of over-dosage with digitalis, and is, therefore, not always a benign condition. We still have much to learn regarding its clinical significance.

I have been impressed by the fact that patients who have consulted me on account of simple fainting attacks often exhibit pronounced sinus arrhythmia. We had a striking example of this association when examining athletes at the Olympic Games in Amsterdam (Bramwell and Ellis 1931). There our routine procedure was to begin by palpating the pulse. In the case of one athlete, a weight-lifter, I called the attention of my colleague, Dr. Ellis, to the unusual degree of sinus arrhythmia exhibited. Later, when we came to take this man's blood pressure, on inflating the armlet of the sphygmomanometer, he fainted. Doubtless the explanation of the association between simple fainting attacks and sinus arrhythmia is that both are manifestations of an over-active vagal mechanism.

PULSUS ALTERNANS

There is one other common type of cardiac arrhythmia to which I must refer—namely, pulsus alternans. This condition cannot be recognised by palpation of the pulse, but is clearly shown in sphygmographic tracings. Clinically it is easily recognised during the estimation of blood pressure. When the pressure in the armlet is high, only the stronger beats get through; but, as the compressing pressure falls from the systolic to the diastolic level, the weaker beats penetrate the armlet and the pulse-rate suddenly doubles.

Pulsus alternans is an important sign of left ventricular failure; but, apart from this condition, it may occur in any type of regular tachycardia such as paroxysmal tachycardia or auricular flutter. Alternation is seen in the last few beats of the paroxysm illustrated in Fig. 6.

In the time at my disposal I have only been able to refer very briefly to the subject of the cardiac arrhythmias. I have merely attempted to indicate that, although during the past fifty years a considerable advance has been made in this sector, the final objective has not yet been reached.

Condition of Arterial Wall

I will defer for the moment consideration of the question of pulse tension and pulse form, and pass on to our fourth problem—the condition of the arterial wall.

ARTERIO-SCLEROSIS

Thickening of the superficial arteries may be detected by palpation, and thickening of the retinal arteries with the ophthalmoscope. Arterio-sclerosis is the clinical manifestation of three distinct pathological conditions. These may occur either separately or together. They are athero-sclerosis, hypermyotrophy, and Monckeberg's degeneration.

Athero-sclerosis starts as a fatty degeneration of the intima and later spreads to the media. The other two lesions are confined to the muscular coat. *Hypermyotrophy* is a particularly interesting condition, since it represents the physiological response to high blood pressure. The hypertrophy of the muscular elements in the arterial wall is not only analogous, but proportional, to the hypertrophy of the left ventricle. Turnbull (1914) states that from microscopic examination of the arteries in this condition it is possible to estimate the increase in the weight of the heart. *Monckeberg's degeneration* consists of a calcareous change in the media, which in advanced cases may convert the arteries into rigid tubes and render them opaque to X rays.

It is important to remember that arterio-sclerotic lesions are not uniformly distributed throughout the body, and that thickening of the radial arteries is not necessarily associated with similar changes in the aorta. We must distinguish between focal and general arterio-sclerosis. When the arterio-sclerotic process involves vessels supplying a vital organ such as the brain or heart, it may lead to cerebral or coronary thrombosis. The clinical picture is then clearly defined. When, however, the more silent areas of the body are affected the diagnosis rests on evidence which is less direct.

FIG. 8.—Sphygmogram and electrocardiogram from a case of partial heart-block. The black lines in the latter indicate the length of the P–R interval in the different cycles.

MECHANICS OF THE PULSE-WAVE

Arteries may be classified in two main groups (Porier 1902), the "elastic type," such as the aorta, subclavian, and carotid, and the "muscular type," such as the radial and lingual. Medium-sized vessels such as the axillary and common iliac are transitional in structure between these two types. The muscular arteries regulate the distribution of blood to the different organs of the body in accordance with their varying requirements; while the aorta and its main branches constitute a great elastic reservoir, the purpose of which is to lighten the work of the heart and to convert the intermittent cardiac output into a continuous capillary flow.

When the heart contracts, the blood ejected by the left ventricle has to be accommodated in the aorta. This is made possible partly by displacement of blood to the periphery and partly by expansion of the aorta itself. With each contraction of the heart a wave of increased pressure passes along the arteries. This we call the pulse. It is important to distinguish between the *transmission of pressure* within the arteries and the *movement of the blood itself*.

An analogy will help to make this clear. When a railway engine starts to shunt a row of trucks standing in a siding, one truck bumps against the next and a jolt is transmitted all along the line; but, whereas it takes a very short time for the shock to reach the guard's van at the far end of the train, it takes the train, as a whole, a considerable time to travel this distance. The slowly moving train corresponds to the blood flow, while the jolt transmitted from truck to truck corresponds to the pulse-wave.

The pulse-wave is like a ripple travelling on the surface of moving water. Its movement is relative to the movement of the fluid in which it occurs. The rate at which the pulse-wave travels towards the periphery is equal to the velocity of the pulse-wave relative to the blood stream plus the velocity of the blood stream itself; or, in the case of the waves reflected from the periphery, the difference between the two, since they are travelling in opposite directions.

What I have said regarding the elasticity of the aorta applies in varying degree to all arteries of the body. Each segment of the arterial tree helps to reduce the work of the segment proximal to it (and so ultimately of the heart) by providing, in response to a relatively small rise in pressure, accommodation for a considerable volume of blood. The more elastic the arteries, the smaller will be the rise in pressure required to produce a given increase in their volume. Regarded from this aspect, the efficiency of the arteries depends solely on their elasticity.

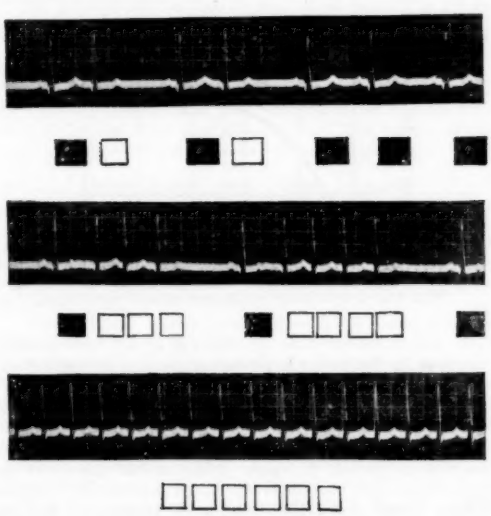

FIG. 7.—Electrocardiogram from the same patient as Fig. 6. The dark and light squares indicate normal beats and extra-systoles respectively. The bottom record shows part of a paroxysm of tachycardia.

PULSE-WAVE VELOCITY AND ARTERIAL ELASTICITY

In the living subject it is not possible to measure arterial elasticity directly; but, since the velocity with which the pulse-wave is transmitted along the arteries depends on the extensibility of the vessel walls, the latter may be calculated if the former be known.

A formula relating pulse-wave velocity to arterial elasticity was put forward by Moens in 1878. This, however, was not of much practical value since

it contained three unknown factors, none of which was easily measurable. In 1922 A. V. Hill and I put forward a very much simpler formula—

$$\text{Velocity (in metres per second)} = 3{\cdot}57 \Big/ \sqrt{\text{percentage increase in volume per mm. Hg increase of pressure.}}$$

From this formula, a direct observation of the velocity of the pulse-wave, in any segment of an arterial trunk, enables one to calculate, in absolute units, the mean extensibility of the vessels composing that segment.

In a series of 74 normal healthy individuals of ages ranging from 4 up to 84 years, we found that the pulse-wave velocity increased progressively with age (Bramwell, Hill, and McSwiney 1923). The values recorded ranged from 4·7 to 8·6 m. per sec. and amongst young individuals, at any rate, the deviation from the mean value is less than ±1 m. per sec.

TABLE II

Age (in years) ..	5	10	15	20	30	40	50	60	70	80
Mean velocity ..	5·2	5·55	5·9	6·2	6·75	7·2	7·6	8·0	8·3	8·55
Mean elasticity ..	0·47	0·41	0·36	0·33	0·28	0·24	0·22	0·20	0·18	0·17

Table II gives the mean pulse-wave velocity at different ages, and the corresponding elasticity of the arterial wall, as calculated from the formula to which I have referred. These values are represented graphically in Fig. 9, from which it will be seen that between the ages of 10 and 60 extensibility is halved. This means that, for a given output per beat, the pulse pressure will have to be about doubled and the systolic pressure considerably increased over this interval of years.

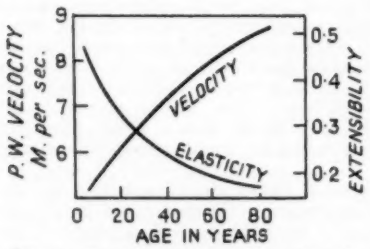

FIG. 9.—Graphic representation of value given in Table II, showing decrease in elasticity with age.

The arterial wall is not a homogeneous structure but is composed of materials possessing different physical properties. We may consider it as consisting of two systems of fibres—an extensible system (elastic tissue) and a relatively inextensible system (fibrous tissue and muscle). When the arterial wall is first put on the stretch, the extensible elastic system alone comes into play, and a considerable increase in the volume of the artery may be produced by a relatively small increase in pressure. As the pressure in the artery rises, the inextensible system gradually begins to operate and limits further stretching of the arterial wall. This is exemplified by two patients whom I had recently under my care. The first was a man of 72 with calcified arteries and a diastolic blood pressure of 80, and the second a woman of 23 suffering from chronic interstitial nephritis with apparently healthy arteries, whose diastolic blood pressure was 140. In both these cases the velocity of the pulse-wave was 11 m. per sec. In other words, an apparently healthy artery at a pressure of 140 mm. exhibited the same degree of rigidity as an extremely stiffened artery at a pressure of 80 mm.

Roy in 1880 studied the relation between volume and pressure in blood-vessels of cats, dogs, and rabbits. He showed that at high pressures the extensibility of the vessel wall is greatly impaired.

In order to study the relation of arterial extensibility to blood pressure in man, we (Bramwell, Downing, and Hill 1923) made a series of observations on the pulse-wave velocity in human arteries removed post mortem. In Fig. 10 the results of three typical experiments on arteries which presented no gross evidence of disease are represented graphically, the pulse-wave velocity being plotted against pressure. From the mean of these three curves, using the formula which I have given you, we can calculate the extensibility of an artery at different pressures, and we can plot a curve (Fig. 11) showing the relation of the total volume of an artery to the pressure inside it.

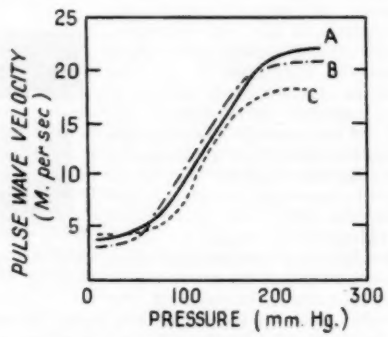

FIG. 10.—Relation between pulse-wave velocity and pressure in three "normal" individuals under 20 years of age.

Let us now turn to the clinical application of these facts. From Fig. 11 you will see that when the diastolic pressure is 80 mm. Hg a systolic pressure of 120 (that is to say, a pulse pressure of 40) will produce an increase in volume of the artery of about 8 per cent. When, however, the diastolic pressure is 120 the arterial wall is already under considerable tension at the end of diastole. It has become much less extensible, and a pulse pressure of about 120 —i.e., three times as high—is required to produce a similar increase in volume.

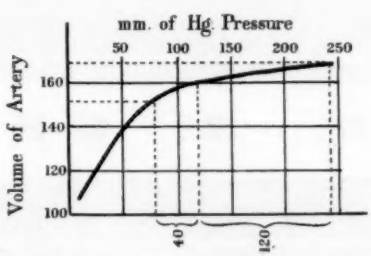

FIG. 11.—Curve based on experimental observations.

When the diastolic pressure is very high, even an enormous pulse pressure will enable the arteries to accept only a relatively small ventricular output. Then, apart from the danger of rupturing diseased arteries by a very high systolic pressure, or of imposing an intolerable burden on the heart, by curtailing the oxygen supply to the tissues, the reduced

ventricular output makes severe physical exertion impossible.

I wish especially to emphasise the fact that a high diastolic pressure is just as potent a factor in reducing arterial efficiency as is arterio-sclerosis.

I have dealt rather fully with the question of pulse-wave velocity and arterial elasticity for two reasons. In the first place, this method of investigation helps to give one a clearer conception of the full significance of high blood pressure; and, secondly, the measurement of pulse-wave velocity is a method applicable to clinical problems.

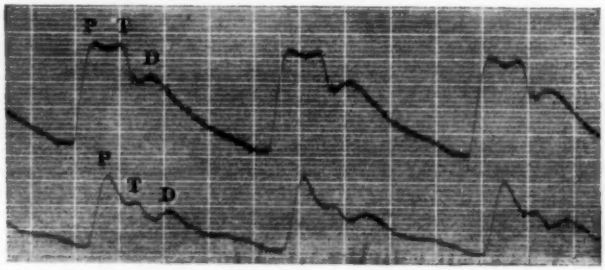

FIG. 12.—Optical sphygmograms recorded from the carotid (above) and radial (below) arteries in a normal subject. P = percussion wave; T = tidal wave; D = dicrotic wave.

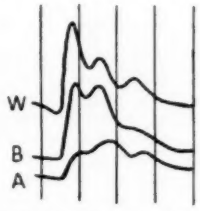

FIG. 13.—Radial sphygmograms from patients with aortic incompetence or stenosis. W = water-hammer type; B = bisferiens type; A = anacrotic type.

Laubry (1925) and his associates have put forward a very strong case in favour of a group of clinical syndromes which they call "les syndromes d'aortite posterieure." Their contention is that arterio-sclerotic lesions affecting the thoracic and abdominal aorta may give rise to pain, dyspepsia, and other symptoms, and that the clinical picture so produced may closely simulate peptic ulcer and various other diseases. They base their diagnosis largely on two special examinations, radiography and the estimation of the velocity of transmission of the pulse-wave. In health, the radial and femoral pulses are synchronous. Asynchronism may be due to an increase or to a decrease in the rate of transmission of the pulse-wave in the aorta. The former suggests sclerosis and the latter aneurysm.

Hitherto but little progress has been made towards solving the problem of arterio-sclerosis. One has only to study the recent survey of the position given by Cowdry (1933) and his associates to realise how far we still are from our objective on this sector of the battle front.

Pulse Form and Pulse Tension

THE NORMAL SPHYGMOGRAM

Since the form of the sphygmogram is determined by the variation of pressure in the artery, it is convenient to consider together the problems of pulse form and pulse tension.

The methods now at our disposal for measuring the systolic and the diastolic blood pressures enable us to speak about pulse tension with a degree of precision which was not possible fifty years ago; while the more delicate optical methods of registration which have been used in animals by Otto Frank (1895), Tigerstedt (quoted by Mackenzie 1902), Wiggers (1923), and other workers eliminate many of the mechanical artefacts inseparable from records taken with the more primitive types of sphygmograph. These optical methods are readily applicable to man.

Wiggers showed experimentally in dogs that the pressure changes in the large arteries near the heart are a faithful reproduction of those taking place within the left ventricle. Let us, therefore, consider what information the clinical sphygmogram can give us concerning intracardiac events in man. In studying the pulse from this point of view it is important to remember that, in the course of transmission from heart to periphery, the pulse-wave is subject to the damping influence of the elastic arterial walls. This tends to round off the rapid deflexions and so to modify the form of the sphygmogram, as you will see from Fig. 12, in which the upper record is taken from the carotid and the lower one from the radial artery.

The typical sphygmogram consists of three waves: The first, or percussion wave (P), is due to the arrival of the pulse in the artery under the sphygmograph. The mode of production of the second, or tidal wave (T), is less obvious. To explain its presence it has been suggested that ventricular systole occurs in two stages. During the first stage, the ventricle, so to speak, merely takes the strain, by developing just sufficient tension to put the walls of the aorta on the stretch. During the second stage, it develops the additional tension necessary to expel the remainder of its contents. To me, this explanation has never seemed satisfactory; the premises on which it is based are unsound, and I would suggest an alternative hypothesis.

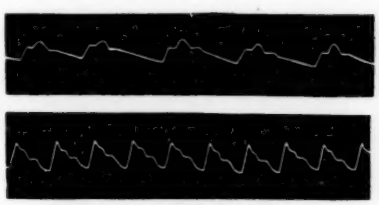

FIG. 14.—Effect of acceleration of heart on anacrotic pulse-wave (Steell 1899).

We know that the pulse-wave takes about 1/10 sec. to travel from the aorta to the radial and femoral arteries. It is probable that reflected waves will pass back towards the aorta from various parts of the periphery. Such reflected waves would be manifest in the central arteries in about 1/5 sec. after the commencement of the upstroke of the sphygmogram. This is the time at which the tidal wave makes its appearance. I would suggest that the tidal wave represents the summation of the outgoing and reflected waves.

During the ejection phase of systole, the left ventricle and the aorta are in free communication. Thus pressure changes in the aorta are transmitted directly to the ventricle, and are represented on the intraventricular pressure curve. But the ventricle forms the dead end of the system. Hence the reflected wave, being no longer able to travel centralwards, is again reflected and travels to the periphery as a part of the outgoing pulse-wave.

THE ABNORMAL SPHYGMOGRAM

Under pathological conditions, the amplitude of the excursion and the pressure gradient of the upstroke of the sphygmogram are determined chiefly by four things: (1) the stroke volume—i.e., the output per beat—of the ventricle, (2) the rate at which the blood is ejected from the ventricle into the aorta, (3) the peripheral resistance, (4) the extensibility of the arterial walls.

The most striking deviations from the normal type of sphygmogram are seen in patients with aortic incompetence and aortic stenosis. In 1921 Feil and Gilder made some interesting observations on the radial sphygmogram in patients with these lesions.

They described three types of pulse (Fig. 13). In the "water-hammer" type, the upstroke is abrupt and the tidal wave relatively inconspicuous. In the "bisferiens" type, the gradient is less steep, and the tidal and percussion waves are of approximately equal height. In the "anacrotic" type, the summit is formed not by the percussion but by the tidal wave. In their paper they do not discuss the factors instrumental in producing these three different types of record; but I would suggest that they are as follows.

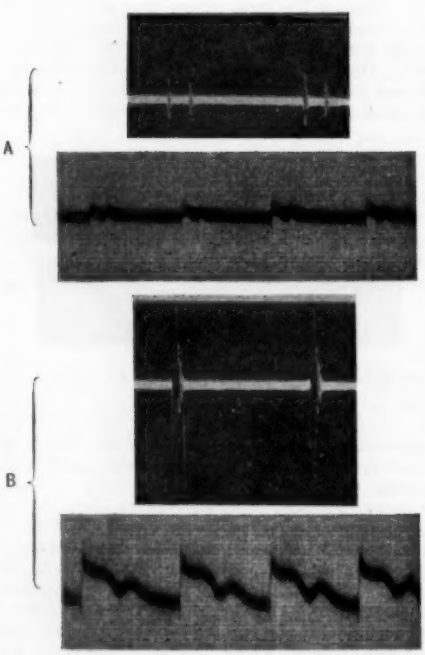

FIG. 15.—Phono-arteriograms and sphygmograms from patient with pulsus bisferiens. A, compressing pressure = 115 mm. Hg and 100 mm. Hg respectively. Note double sound. B, compressing pressure = 40 mm. Hg. Time intervals 0·234 sec.

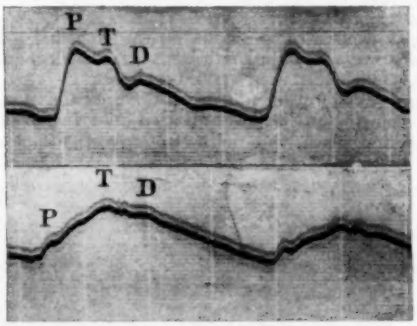

FIG. 16.—Effect of high blood pressure on the carotid sphygmogram. Above, normal; below, from a hyperpietic subject showing maintained tension during systole. P, T, D = Percussion, tidal and dicrotic waves.

The *water-hammer pulse* is found in cases with free aortic regurgitation. Owing to the extremely low diastolic pressure, the ventricle has little resistance to overcome in discharging its contents. Under these conditions, the maximal ejection occurs early in systole, while during the later part of systole the ventricular output is much reduced. After reaching its maximum early, the pressure rapidly falls. This fall in pressure tends to neutralise the rise in pressure produced by the wave reflected from the periphery. Hence the tidal wave is inconspicuous.

The *anacrotic pulse*, on the other hand, is always associated with some degree of aortic stenosis. Owing to the smallness of the aortic orifice, the ventricle is forced to expel its contents more slowly, and, throughout the ejection phase of systole, the rate of discharge of the blood into the aorta is much more uniform. The ventricular pressure is still well maintained when the reflected wave returns from the periphery, and the summation of the outgoing and incoming waves causes the tidal wave to be higher than the percussion wave. Graham Steell (1899) has drawn attention to the important fallacy that any pulse that exhibits a tidal wave can readily be made anacrotic by the application of excessive pressure with the sphygmograph. He also points out that, in patients with aortic stenosis, the pulse loses its anacrotic character when the heart accelerates. The two sphygmograms in Fig. 14, which are taken from the same patient, illustrate this point

The *pulsus bisferiens* is intermediate between the water-hammer and the anacrotic types. It occurs in patients in whom some degree of aortic stenosis is combined with regurgitation. An interesting point in connexion with the pulsus bisferiens is shown in Fig. 15 (Bramwell and Hickson 1926). During the estimation of blood pressure, when the pressure in the armlet is only slightly below systolic, the two peaks of the pulse-wave succeed in penetrating the compressed segment, but the dip between them is obstructed. Hence, with each heart-beat, the artery below the armlet receives two impacts, each of which gives rise to sound. When, however, the pressure in the armlet falls further, the two impacts fuse into one and only one sound is heard.

The effect of *hypertension* on the sphygmogram is similar to that of aortic stenosis. This was clearly recognised by Broadbent. From the point of view of the heart it matters not whether the additional work it has to perform be due to a constricted aortic orifice or to inextensible arteries. Similarly, in patients who, from any cause, have a low diastolic

and a high pulse pressure, the pulse tends to resemble that of aortic incompetence.

The way in which the ventricles may react to high blood pressure is shown in the lower of the two sphygmograms illustrated in Fig. 16, the upper record being taken from a normal subject. The duration of the total ejection period, as measured from the commencement of the upstroke to the dicrotic notch, is similar in the two records; but, in the normal subject, the crest of the wave occurs 0·07 sec. from the beginning, whereas in the hyperpietic, the time interval is 0·21 sec. In the normal subject the ventricular pressure begins to fall off early in systole; but in the hypertrophied ventricle of the hyperpietic the tension is maintained throughout almost the entire duration of systole. These two types of action might be compared to those of a horse or a bullock when starting to drag a heavy load. The horse starts off with a jerk, but the bullock gives a slow and steady heave. By reducing its output during the initial stages of ejection, the ventricle of the hyperpietic allows time for the first portion of the blood ejected to escape to the periphery before the last portion is thrown into the inextensible aortic chamber.

In such cases, the form of the sphygmogram may afford information regarding the capacity of the heart to meet its liabilities. Just as a progressive fall in the systolic pressure is a bad omen, since it signifies that the failing heart is no longer able to maintain its output against the increased resistance, so the pressure gradient of the front of the pulse-wave may give some indication of the way in which the ventricle is responding to the increased burden.

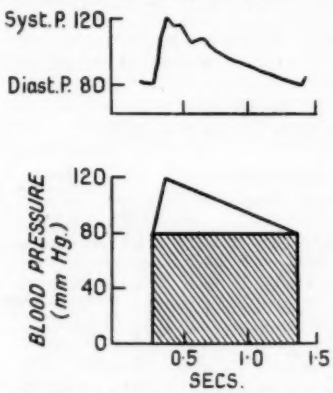

FIG. 17. — Clinical and corresponding "absolute" sphygmograms from a normal subject with a blood pressure of 120/80 mm. Hg.

STUDY OF THE CENTRAL PULSE

I will summarise my reasons for believing that a systematic study of the central pulse in man would be worth undertaking.

The pressure changes in the centrally situated arteries are similar to those within the left ventricle, during the ejection phase of systole. In fact, in man, they are the only reliable indication that we possess of what is taking place within that chamber of the heart.

There are now available adequate optical methods for recording accurately the form of the sphygmogram in the central arteries.

Since the variations in the form of the central sphygmogram, as met with in disease, afford an indication of the liabilities which the heart is being called upon to meet, and of its capacity to meet them, they are capable of throwing light on the problems of cardiac diagnosis and prognosis.

THE "ABSOLUTE SPHYGMOGRAM"

For convenience one generally refers to the sphygmogram as a "pressure-time" curve. This is not strictly accurate. It should be an "expansion-time" curve; for, owing to the diminution in extensibility of the artery as the pressure rises, a given excursion near the top of the upstroke represents a much greater increase in pressure than an equal excursion near the bottom of the upstroke.

A more accurate picture of the pressure variations of the pulse is given by what has been termed the "absolute sphygmogram." This is a diagram (Fig. 17) in which the ordinates represent pressure, as measured by the sphygmomanometer, and the abscissæ time, as shown by the sphygmogram. The absolute sphygmogram consists of a rectangle representing the constant (diastolic) element of the pressure in the artery, and a superimposed triangle representing the variable (pulse) pressure. The latter corresponds to the clinical sphygmogram, but depicts pressure instead of volume changes.

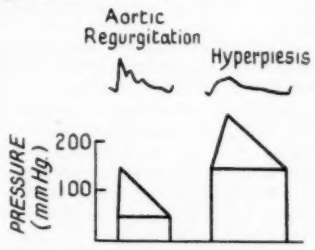

FIG. 18.—Typical clinical and "absolute" sphygmograms from cases of aortic regurgitation and hyperpiesis.

In Fig. 18 two clinical sphygmograms with the corresponding absolute sphygmograms are given for the sake of comparison. That on the left is typical of aortic regurgitation, while that on the right is typical of hyperpiesis. These two records serve to illustrate the difference in behaviour of the arterial wall when the initial tension is high and low respectively.

ALKALOSIS WITH DISORDERED KIDNEY FUNCTIONS

OBSERVATIONS ON A CASE

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THE salient features of the syndrome of alkalosis have been described by Hardt and Rivers (1923), Cooke (1932), Berger and Binger (1935), Oakley (1935), and Ryle (1935). The kidney function is known to be disorganised and the following facts have so far been elucidated. The blood-urea may rise very high, and fall with recovery. The blood creatinine (Hardt and Rivers 1923, Berger and Binger 1935), the inorganic phosphates (Cooke 1932), and the inorganic sulphates (Berger and Binger 1935) may do the same. The urea and sulphate clearances have been found to be reduced (Berger and Binger 1935) as well as the excretion of phenolsulphonephthalein. The urine contains no chlorides, but this is not necessarily an aspect of renal failure, for the plasma chlorides are said almost invariably to be very low. This fall in plasma chlorides is accompanied by a rise in the bicarbonate and generally a rise in the total base of the serum (Cope 1936, Cooke 1932). This rise in total base, and also the number of renal functions

disorganised, indicate that the high blood-ureas are not brought about by specific reabsorption of urea to raise the osmotic pressure of the plasma. In other words these are not instances of uræmia "par manque de sel" (Blum and others 1928). The nature of the renal lesion, however, is quite unknown and no detailed analysis of it has up to now been made.

The introduction of inulin as a measure of glomerular filtration (Shannon 1934, 1935a, b, Shannon and Smith 1935) has provided a new weapon for the investigation of kidney function. That inulin comes very near to measuring glomerular filtration in the normal human kidney now seems highly probable, and while it has not yet been proved to do so in the diseased kidney, it may be taken to come much nearer doing so than any other substance.

The patient, a man aged 34, was first seen on Jan. 13th, 1937. He was at that time wasted and dehydrated, and had been in a stuporose state for some days. He was known to have pyloric stenosis due to an ulcer and to have been treated up to admission with Maclean's powders. Before admission he had been vomiting intermittently for some time.

On examination he was found to have latent tetany, his urine was alkaline, and contained practically no chlorides. His blood pressure was 92/60 mm. Hg, and his blood-urea 150 mg. per 100 c.cm. On these findings a tentative diagnosis of uncompensated alkalosis was made. In order to investigate his kidney function, a self-retaining catheter was inserted and his bladder emptied. A mixture of 25 g. of inulin and 3 g. of creatinine made up to 100 c.cm. with distilled water was injected intravenously, and 30 minutes later his bladder emptied once more and washed out twice with sterile distilled water. Urines were then collected half-hourly, the bladder being washed out on each occasion. Blood was taken by vein puncture midway between the times at which the samples of urine were collected. The patient was given no further alkaline medication, and with intravenous salines and abundant fluid and salt by mouth he improved for about a week and his blood-urea fell to 100 mg. per 100 c.cm. He then began to vomit uncontrollably for the first time since entering the hospital and he was accordingly operated on for the relief of the pyloric obstruction. The operation was a complete success and the patient's recovery continued almost uninterruptedly. On Feb. 13th his blood chemistry and kidney function were re-examined and the patient discharged on the next day. His systolic blood pressure did not rise above 100 mm. Hg during his stay in hospital, except for a short period at the beginning of his second kidney function test, when it was found to be 110/80. This may have been due to apprehension. At all events it was 98/70 later on the same day and again the day after.

METHODS

The inulin used for these tests was purified by being boiled with charcoal as directed by H. W. Smith, J. A. Shannon, and H. Chasis (personal communication), and was quite non-toxic, as proved by the injection of large amounts into normal persons. Blood was taken practically without constriction. Serum was used for determination of the bases, plasma (sodium oxalate) separated rapidly under paraffin for chloride, bicarbonate, and phosphate determinations. Plasma (heparin), also separated at once, was used for the determination of creatinine, inulin, and urea. All three were determined in the same Folin-Wu filtrate. Inulin was determined both in blood and urine after acid hydrolysis by Harding and Downs's (1933) method, and urea by a xanthydrol procedure (Lee and Widdowson 1937). The other compounds or ions were determined by the methods used in previous investigations (Harrison 1930, McCance 1935, McCance and Widdowson 1936). All determinations, except those of serum potassium, were carried out in duplicate.

RESULTS

Blood chemistry.—A comparison of the patient's blood chemistry on admission with that on discharge is set out in Table I. It will be observed that the hæmoglobin fell, but there was little change in the plasma proteins. The fall in the blood-urea and the inorganic phosphorus reflect the improvement in the kidney function, the rise in chloride and fall in bicarbonate the relief of the alkalosis. The serum sodium was low on both occasions, the calcium was never high, and although the magnesium fell with recovery it was never grossly abnormal. When first seen this case was diagnosed as one of uncompensated alkalosis, similar to those described by

TABLE I

Changes in the Blood Chemistry

Constituent.	Determined in—	On 1st exam., Jan. 13th.	On discharge, Feb. 13th.
Hæmoglobin	Whole blood.	110 per cent.	86 per cent.
Urea ..	Whole blood.	160 mg./100 c.cm.	30 mg./100 c.cm.
Proteins ..	Serum.	6·25 per cent.	6·12 per cent.
Sodium ..	„	309 mg./100 c.cm.	309 mg./100 c.cm.
Potassium ..	„	19 „	24 „
Calcium ..	„	8·1 „	9·9 „
Magnesium ..	„	3·0 „	2·1 „
Inorganic phosphorus	Plasma.	8·0 „	3·5 „
Chlorides ..	„	248 „	348 „
Bicarbonates	„	101 vols. per cent.	64 vols. per cent.

TABLE II

Changes in the Kidney Function

Constituent.	Clearances. On admission.	Clearances. On discharge.	Ratio CD/CA.*	Ratio (clearance × 100) to inulin clearance on— Admission.	Ratio (clearance × 100) to inulin clearance on— Discharge
Inulin ..	9·3 c.cm./min.	55·7 c.cm./min.	6	100	100
Creatinine ..	11·1 c.cm./min.	88·9 c.cm./min.	8	119	160
Urea ..	3·2 c.cm./min.	45·7 c.cm./min.	14·4	34·5	82
Urea as per cent. of normal by stand. or max. formula ..	7·4 per cent.	65 per cent.	8·8	79	117
Phosphates	5·35 c.cm./min.	18·9 c.cm./min.	3·54	57·5	34
Chlorides ..	0·024 c.cm./min.	2·55 c.cm./min.	100	0·26	4·6
Sodium ..	0·53 c.cm./min.	1·72 c.cm./min.	3·25	5·7	3·1
Potassium ..	11·5 c.cm./min.	10·3 c.cm./min.	0·9	124	18·5
Ultrafiltrable calcium ..	1·35 c.cm./min.	4·2 c.cm./min.	3·1	14·3	7·5
Ultrafiltrable magnesium	1·73 c.cm./min.	5·9 c.cm./min.	3·4	18·5	10·6

* Ratio CD/CA = clearance on discharge/clearance on admission.

Notes

1. The minute volumes were 0·65 c.cm. on admission and 1·97–3·62 c.cm. on discharge.
2. The figures given for the clearances on admission are the mean of 2 periods. The figure given for the clearances of the organic constituents on discharge are the mean of 3 periods. Those given for the clearances of the inorganic constituents are the mean of 2 periods.
3. The proportions of serum calcium and magnesium likely to be ultrafiltrable were taken from Watchorn and McCance (1932).
4. The ratio in column 3 is a measure of the improvement or otherwise in the clearances.

Berger and Binger (1935), Oakley (1935), and others, and due to the indiscriminate use of alkaline powders. On the other hand Cope (1936) has recently described the results of his investigations of the blood chemistry in "alkali poisoning" caused by Maclean's powders, and has concluded that a characteristic feature is a rise in total base, calcium, and magnesium in the serum. A rise in the first two was certainly not present in the case under discussion and the rise in the last was small. This suggests that the uncompensated alkalosis in this patient was due to the vomiting before admission rather than to the administration of alkalis.

Renal function.—The results of the kidney function tests are set out in Table II, which should not be studied without reference to Table I. The first column shows the clearances "on admission," the second the clearances "on recovery," and the third the improvement or otherwise. It is not legitimate to compare the urea clearances directly with each other owing to the unfortunate but unavoidable change in minute volume. For this reason the urea clearances have also been calculated as a percentage of "normal" using the appropriate formula for the standard or maximum clearance. A comparison of these figures is much fairer. It will be noted that the inulin clearance improved sixfold, that of creatinine eightfold, and of urea (expressed on the "per cent. of normal" basis) rather more. The phosphate, sodium, ultrafiltrable calcium and magnesium clearances all improved between three and four times. There was little change in the potassium clearance and the chloride clearance improved 100 times, partly no doubt as a result of the increase in blood chloride (see Table I). Column 4 of Table II gives the clearances of the various constituents on admission expressed as a percentage of the inulin clearance, and column 5 the same clearance ratios on recovery.

DISCUSSION

A number of these results require a little explanation and discussion.

1. The improvement in the inulin clearance strongly suggests that the major disorganisation of function was a fall in glomerular filtration, but there is no evidence at present as to how this was brought about. The change in blood pressure was probably quite insufficient to be the cause.

2. The creatinine clearance–inulin clearance ratios, even on admission, are of the same order as those obtained by Shannon and Smith (1935) and ourselves (unpublished observations) on normal persons. In normal persons the values obtained for these ratios suggest that in addition to being passed into the urine by glomerular filtration, some creatinine reaches the urine by active tubular excretion. A comparison of the present results with those obtained in normal persons suggests that if this is so then the ability of this patient's tubules to excrete creatinine had fallen to about the same extent as the glomerular filtration.

3. The fact that the improvement in the creatinine and urea clearances is greater than that of the inulin clearance suggests that abnormally large amounts of the first two substances may have been diffusing back from the tubules when the patient was first seen. Unfortunately the interpretation of the creatinine results is made very difficult by the uncertainty about the amount of creatinine which may have been excreted by the tubules on each occasion. The variations in urea clearance are also complicated by the change in minute volume. The fact that the urea clearance improved more than the inulin clearance is the only evidence obtained that any specific reabsorption of urea was taking place on admission (Blum and others 1928, 1929).

4. It may be mere coincidence, but in any case it is worth noting, that the improvements in the phosphate, sodium, calcium, and magnesium clearances should all be of the same order. A further point of interest is that the improvement in all four clearances should be less than that of inulin—i.e., that the clearance ratios should be less on discharge than on admission (columns 4 and 5 of Table II). If the inulin clearance be taken as measuring glomerular filtration, then with recovery a larger proportion of these four ions filtered off in the glomeruli was being reabsorbed by the tubules. Contrast with this the observations on creatinine and urea (although the comparison with the latter is made difficult by the change in minute volume).

5. The sodium and chloride clearances and their relative improvements are of some interest, particularly in connexion with their serum concentrations. From columns 4 and 5 it will be seen how the amounts of the two elements excreted, expressed as a percentage of the amounts filtered off in the glomeruli, changed with the relief of the alkalosis and the rise in the serum chloride.

6. The potassium clearances are peculiar. Taken at their face value and making the usual assumptions about inulin and glomerular filtration they suggest that active excretion of potassium was in progress during the period of uncompensated alkalosis.

It would be unprofitable in the present state of our knowledge of kidney function to discuss these results at greater length, but it is to be noted that the changes are very like those produced experimentally by alkalosis during salt deficiency (McCance and Widdowson 1936). It is interesting, moreover, that in spite of the obvious disorganisation of some of its functions, the kidney is behaving quite normally in others—e.g., the reabsorption of chlorides. Discrepancies however are rather a feature of all forms of nephritis, including the sudden and recoverable disorganisations of kidney function such as are encountered in diabetic coma (McCance and Lawrence 1935).

SUMMARY

1. The kidney function of a case of uncompensated alkalosis has been investigated, using inulin as the substance of reference. The main cause of the uræmic state is thought to be a fall in glomerular filtration. The other changes in the clearances and clearance ratios are suggestive but require confirmation and further investigation.

2. No increase in total serum base or serum calcium was found in this case and only a small rise in serum magnesium.

We are very grateful to Mr. E. G. Muir for permission to investigate this case. One of us (E. M. W.) is indebted to the Medical Research Council for a part-time grant.

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DACRYOCYSTORHINOSTOMY

By R. E. Wright, C.I.E., M.D. Dubl., D.P.H.

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Since the time when chronic dacryocystitis was first treated by draining the lacrymal sac through an opening in the floor of the lacrymal fossa into the nose, a great variety of different procedures to achieve this end have been described. It is not part of my purpose to give a résumé of the history of the operation. It will be sufficient if I say that for a number of years I have taken the opportunity of observing how dacryocystorhinostomy has been treated by both eye and nose surgeons in various clinics in different parts of the world, and that the methods ordinarily observed were not sufficiently simple or expeditious.

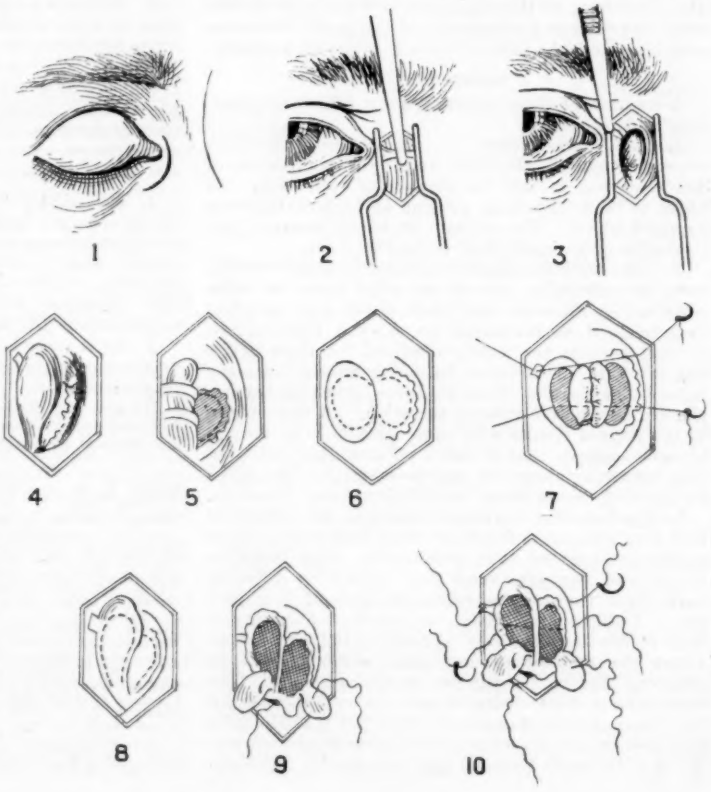
Over ten years ago I considered that the technique of Dupuy-Dutemps was probably the one most suited to our needs in India if only it could be speeded up. It was soon discarded inasmuch as in a busy Indian clinic with large numbers of cases to deal with, one cannot afford to spend half an hour over a sac drainage case when effective relief can be afforded by extirpation in ten minutes or less. Dacryocystorhinostomy had also the disadvantage that it could only be utilised when the lacrymal sac was of a cystic type. As the bulk of our cases were unsuited to a nasal drainage procedure—e.g., fibrous sacs, perisaccular abscess, fistula, &c.—it fell into disuse here, but it was galling to think that those cases that were eminently suitable for dacryocystorhinostomy could not be dealt with by a quick and easy method.

I determined recently to place on trial something rapid, simple, and as effective as the more bloody performances carried out through unnecessarily large facial incisions. This meant a reduction of specialised apparatus and a purely orbital approach, since there did not seem to be adequate reasons for abandoning the treatment of chronic dacryocystitis to the nasal surgeons, and few eye surgeons—in India at all events—are sufficiently trained in rhinology to cope with a combined operation.

The steps of the operation suggested are shown in the diagrams, and a few explanatory notes referring to the different stages will be enough to make matters clear. There is one difficulty that may cause delay and on this account prejudice the ophthalmic surgeon accustomed to conserve time by electing to do extirpation of the lacrymal sac rather than a more complicated operation, and that is the suturing of the cut edge in the sac and in the nasal mucosa, but after a little practice this becomes much easier.

The needle.—I at first used Dupuy-Dutemps long-handled needles (R. and L.), 7 mm. point-to-base, by Moria, but these are not necessary; any fine long needle-holder will do, such as my needle-holder for corneal grafting made by Weiss, with a large-eyed fully-curved 6–7 mm. point-to-eye needle. The makers grade a half-circle needle 6 mm. point-to-eye as a 12 M/M needle. Unfortunately they are difficult to obtain and when suitable needles are not available, this step of the operation must be carried out *secundem artem*. The procedure is much easier when lateral hinged flaps are adopted (Figs. 6 and 7) than when tongue flaps are used. Almost any small half-circle needle will do with the lateral flaps. Alternative methods of suturing will suggest themselves to those not in possession of suitable needles. Perhaps the best means of overcoming the difficulty of passing a point of suture in a small deep hole is to use a straight eyeless needle of 3–5 mm.—i.e., just a sharp point on the end of the suture material. These are not on the market—and the eyeless needles such as the Souttar, the Mersuture, or the Grüss rethreadable which are sold are unsuitable in size—but I have asked one or two firms to make some and no doubt sooner or later they will be obtainable. When necessary, one can make them by cutting a platino-iridium or nickel hypodermic needle of selected bore 3–5 mm. from the point. The point should be suitably shortened and sharpened beforehand. The ligature, on which a single knot has been tied, is then passed through the lumen from the bevelled end. When the knot enters the short tube the blunt end is cramped on to the ligature with a forceps so that the knot prevents a pull through. It can be done without a knot and makes a neater job since a smaller bore needle can be used, but this requires more skill. A sharp-pointed metal-tipped suture such as this can be used like a boot lace.

The operation.—A curved incision is made as shown in Fig. 1. The usual view of the wound in extirpation of the lacrymal sac is shown in Fig. 2, with the Muller's retractor in situ and the internal tarsal ligament cutting



across the exposed hexagon at the junction of its upper and middle thirds. The initial curved incision may be slightly larger than that used for extirpation if desired, but not more than three-quarters of an inch long. The internal tarsal ligament is divided at its bony insertion, and the fascia covering the sac split along its insertion into crista lacrymalis anterior (Fig. 3). The periosteum has been incised along the crista and subperiosteal elevation of the sac from its bed effected with a blunt dissector. The sac is displaced outwards, and the bony floor of the lacrymal fossa exposed. The prominent lower portion of the crista is seen, with the gutter in the dense frontal process of the superior maxilla immediately behind it (Fig. 4). More posteriorly is the thin lacrymal bone, which should be very carefully dealt with in separating the sac. The next step consists in the removal of a fairly large window of bone from the floor of the fossa (Fig. 5). This is most readily accomplished by introducing a small flattened blunt hook through a dehiscence of the suture line in the lacrymal bone and using it to separate the nasal mucosa from its deep aspect. The hook is then further employed to pull off a scale of bone towards the operator. If the lacrymal bone does not present a crack or dehiscence that enables one to raise the first chip of bony shell, it may be given a sharp but gentle tap with the raspatory as if breaking the shell of an egg.

The procedure of removing the bone is in fact similar to that of removing the shell of a hard-boiled egg. At this stage a small pack of cocaine—2 per cent., freshly prepared—is placed over the bony aperture and allowed to act for a few minutes on the nasal mucosa. The scaling of the lacrymal bone is then completed with a blunt hook and forceps. It is convenient in some cases at this stage to use a fine gouge or nibbling forceps, or a Hartmann's angular nasal dressing forceps. Any convenient forceps will do, but care must be taken to avoid tearing the nasal mucosa when removing flakes of bone; this is sometimes difficult. It is a mistake to try nibbling away the tough portion of the groove floored by the frontal process of the superior maxilla, with the idea of extending the aperture laterally. One should rather extend it well down towards the posterior wall of the bony canal. In some cases this may decide us in doing tongue flaps downwards. The sac during this removal of bone is held back by a double blunt hook or any convenient retractor. The outlines of the apertures that are made in the posterior internal wall of the sac and in the nasal mucosa lining the lacrymal bone are shown in Fig. 6. The flap in the sac is easily cut with curved scissors, that in the nasal mucosa is not so easy to make. A fine sharp single- or double-toothed forceps, of the Bader or of the Landolt fixation forceps type, may be used to pick up the mucous membrane near the upper limit of the aperture in order to start the incision with a knife. It is then easily completed with suitable curved scissors. The hinge flaps are approximated and united by two points of suture (Fig. 7). Excess of mucous membrane is cut off before suturing.

Figs. 8 and 9 show an alternative but more difficult method of establishing the opening by adopting tongue flaps. Fig. 10 shows catgut sutures passing through the anterior lip of the opening in the sac on the one side, and the periosteum half-way down the exposed part of the crista on the other. (The figure illustrates the tongue flap type of operation, but the same method of dealing with the anterior lip is used if lateral flaps are employed.) Another suture is shown passing through the cut end of the internal tarsal ligament and the periosteum of the crista at the point of its old insertion. This suture may be of catgut, or, in order to save time, it may be of horse hair taking a bite of the skin wound on either side and thus acting as one of the wound-closing points of suture. The skin wound is closed with three points of horse-hair suture. It is advisable to keep a dressing on the wound with fairly firm pressure till the third day. At the first change of dressings—and the change may be made earlier than the third day if desired—drops of zinc sulph. 0·5 per cent., chloretone 0·5 per cent., and adrenaline (℥ 10 to the ounce) are instilled. The stitches may be removed on the fifth day and 0·5 c.cm. of the above solution very gently injected into the lower punctum with a suitably small pipe. This will demonstrate the freedom of the drainage. Thereafter weak astringent drops such as the above may be prescribed for a fortnight or so.

The small operation outlined above is as bloodless as an ordinary extirpation. It is somewhat more difficult to do well and takes slightly longer, but in cases suited to dacryocystorhinostomy—e.g., dilated sac cases of the middle-age groups—it is preferable to an extirpation, and well worth the little extra time spent.

THE RELATION OF VITAMIN E TO THE ANTERIOR LOBE OF THE PITUITARY GLAND

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(*From the Physiological Laboratories of the British Drug Houses Ltd., London*)

Vitamin E is the fat-soluble factor described by Evans (1927) and proved to be necessary for the normal course of gestation in the female, and for the fertility of the male rat; it has been used with success in the treatment of abortion in pigs (Bay and Vogt-Möller 1934), cattle (Tutt 1933), and man (Currie 1936). Its exact mode of action is unknown and the rationale of its therapeutic use for the achievement of normal pregnancy obscure. In rats kept on a E-deficient diet from the time of weaning and mated during œstrus with normal males of proved fertility, fertilisation can be shown by cessation of the œstrous cycles and by the detection of blood in the vagina on the thirteenth day of gestation. If the animal has insufficient stores of vitamin E, some or all of the fœtuses formed will be resorbed.

It has been recognised for some years that the anterior lobe of the pituitary gland exerts a controlling influence on the function of the sex organs. Firor (1933), Houssay (1935), Robson (1936) and others found that hypophysectomy of animals during pregnancy produces abortion with failure of lactation but that if only the posterior lobe of the pituitary be removed pregnancy, parturition, and lactation are unaffected. The similarity of the effects of hypophysectomy to those produced by vitamin-E deficiency suggested that the two phenomena might be related.

EFFECTS OF VITAMIN-E DEFICIENCY ON OFFSPRING

In a recent series of experiments carried out in these laboratories (Barrie 1937), it had been found that many of the animals reared on the E-deficient diet exhibited an initial fertility and produced a litter of living young before sterility accompanied by the resorption typical of E-deficiency set in. In most cases the young of these rats failed to grow properly and about a fortnight after birth were obviously stunted and abnormal in appearance. Rats which had become sterile through E-deficiency, when treated with small and apparently inadequate doses of a vitamin-E concentrate produced litters which also showed similar degrees of abnormality. In other instances, the rats failed to rear their young owing to partial or complete failure of lactation.

Tables I and II summarise the record of 44 litters born to E-deficient rats before they had become sufficiently depleted of the vitamin to resorb the whole litter before the completion of gestation. The record of these litters is compared with that of the first litters of 44 normal rats. These does were fed on a complete diet from birth. The average number per litter of the E-deficient rats is not significantly changed, but is considerably less than the average number for the second litter of a normal rat which

ranges between 7 and 13. Stillbirths are very rare among rats and none occurred in the 44 normal cases recorded. Normal rats generally rear all their young, but occasionally they become nervous and kill some of the litter if disturbed and this accounts for the 7·1 per cent. mortality in the normal young. The E-deficient rats are handled every day and are consequently very tame and unlikely to kill their litters if disturbed.

All the young rats were weighed and examined daily and it was found that the litters of E-deficient rats grew abnormally slowly and at 14 days after birth were about half the weight of animals born of normal does fed on a diet rich in vitamin E (Fig. 1).

At first these young, though small and often very fat, were normal in appearance; but, usually about 18–20 days after birth and sometimes as early as the fourteenth day, the animals looked definitely abnormal. The affected rats were always undersized and had sparse fur which was soft and unusually white. The first symptom observed was a weakness in the feet and consequent inability to grip a rod. The animals moved slowly, their eyes were dull and their general habits indicated that they were of subnormal intelligence. In most cases first the hind legs and later the fore legs were affected. The symptoms gradually increased in severity, and the animal became unable to spread its toes and dragged its feet when it walked (Fig. 2). On the third day, severe cases showed characteristic carpopedal spasms, developed intermittent convulsions and finally died.

Examination of the thyroids of 82 abnormal rats revealed in every case a hypoplastic gland with enlarged vesicles filled with colloid, and in many cases there was a considerable amount of fibrous tissue between the vesicles. Figs. 3 and 4 show the difference between the thyroid of the abnormal young rat shown in Fig. 2 and that of a normal rat of the same age.

The skulls of these rats were abnormally soft and cut like paper and ossification was noticeably less than in normal rats of the same age. This condition is very similar to that described by Mortimer (1937) in hypophysectomised rats.

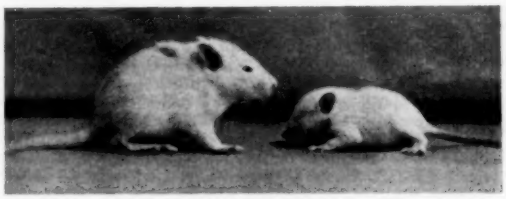

FIG. 1.—A normal rat aged 16 days with a E-deficient rat of the same age.

Evans and Burr (1928) described a form of paralysis in the young of E-deficient rats and ascribed it to some disorder of the nervous system. Ringsted (1935) found that adult E-deficient rats developed a paralysis of the hind limbs, which he considered to be neuropathic in origin. No histological examination was made in either case, so that it is impossible to tell whether the paralysis observed was in any way comparable with the present observation. Typical examples of the abnormal young observed in this laboratory showed no degeneration of the spinal cord when examined by the Weigert-Pal or Marchi techniques.

FIG. 2.—An abnormal rat aged 20 days. The back legs are weak and unable to support the body. The front feet show a developing carpopedal spasm. The nose is upturned and the animal is abnormally fat.

The anterior pituitary glands of 20 of these rats were examined and it was found that there was some degranulation of the acidophils and that some of the basophils had a spongy appearance. There was a considerable number of empty cells which were probably acidophils.

The carpopedal spasm shown by the abnormal rats suggested that there might be a decrease in the serum calcium. Since it was found impossible to obtain sufficient serum for an estimation from the young animals, determinations were made on the blood of adult sterile animals. The sterile animals were found to have an average serum calcium of 11·5 mg. per 100 ml. compared with a normal value of 12·6 mg. per 100 ml. This difference is not considered significant; and it is believed that the carpopedal spasm was not caused by a low serum calcium, as the symptoms were not alleviated either by subcutaneous injection of 1 c.cm. calcium gluconate (10 per cent. solution) or by 0·5 c.cm. of a 5 per cent. solution of calcium lactate and 10 international units of vitamin D given by mouth. The thyroids of the adult sterile rats used for the calcium estimations showed exactly the same appearance as those of the abnormal young (Figs. 5–7).

TABLE I

Record of Litters of Partially Vitamin-E Deficient Rats

Animals.	Treatment.	Total of young	Stillborn.	Weaned.	Abnormality.
3	None	9	0	0	No lactation.
6	,,	40	1	0	Lactation failed.
4	,,	31	2	2	Lactation scanty.
23	,,	116	4	13	Abnormal young.
3	,,	10	0	0	Killed by mother.
5	,,	23	7	6	No obvious abnormality.
Total 44	None	229	14	21	—

Record of Litters of Normal Rats

Adequate diet with vitamin E from birth

Total 44	..	295	0	274	Normal.

Lactation is often scanty in the E-deficient does and may stop suddenly. It is not unlikely that the three animals which killed their young, did so because they were not lactating.

TABLE II

Comparison of the Litters of Vitamin-E Deficient Rats and Normal Stock Rats

	E-deficient rats.	Normal rats.
Average per litter	5·2	6·7
Stillbirths (per cent.)	6·1	0·0
Case of deficient lactation (per cent.) ..	29·5	0·0
Litters containing abnormal young ..	52·3	0·0
No. of animals reared (per cent.) ..	9·1	90·9

The litters of the E-deficient rats were born before the animals had been long enough on the deficient diet to become sterile. The figures for the normal rats represent the record of the first litters of 44 rats fed on a complete diet.

THE UNFERTILE DOE

Does which are so deficient in vitamin E that they are unable to produce a litter, respond to treatment with concentrates of this vitamin, and if adequately dosed in the early stages of pregnancy, will produce and rear a litter of normal young; the same has been observed in the case of partially deficient animals.

In these sterile does, ovulation and œstrous cycles are apparently normal. The animal can be mated with a normal male and implantation verified by observation of blood in the vagina on the thirteenth day after mating. The animal increases in weight and the fœtuses can be felt in the uterus but are gradually reasorbed from the 15th to the 21st, and in a few cases even, up to the 28th day. In one case in which an animal died on the 19th day of pregnancy the uterus was examined and found to contain traces of seven resorbed fœtuses and two normal ones which would probably have been born at 21 days. This case shows that birth of living young is not necessarily proof that the animal has an adequate supply of vitamin E. Twenty-three sterile does either died or were killed for histological examination. With one exception the thyroid gland was found to be hypoplastic. This confirmed the findings of Singer (1936).

The anterior pituitary glands of these rats have been examined by the Wolfe and Cleveland or by the Severinghaus technique (Wolfe and Cleveland 1932, Severinghaus 1932). The Wolfe and Cleveland method involves Regaud's fixative followed by Mallory's aniline blue, orange G stain. In Severinghaus's method the glands are fixed in an osmic acid, dichromate mixture, and finally stained with acid fuchsin and methyl-green acid violet. For general use one or other of these two methods has been employed as both give excellent differentiation of the cells and granules. In a few cases the second Severinghaus method has been used (Severinghaus 1932) as this reveals the Golgi apparatus and gives good differentiation of the mitochondria from the acidophilic granules. With these differential stains, marked changes have been found in the anterior pituitary glands of these rats.

The acidophils were very small and degenerated; they showed no distinct granulation; in many cases the nucleus was pyknotic and the cytoplasm stained evenly with the acid stain. In several cases a large number of these degenerate cells were found in the region of the cleft. The gland also exhibited large numbers of empty cells, some of which could be identified as acidophils, some of the others were probably basophils. There was some degranulation of the basophils, and the anterior lobe had a general spongy appearance in some cases owing to the large number of empty or partly empty cells.

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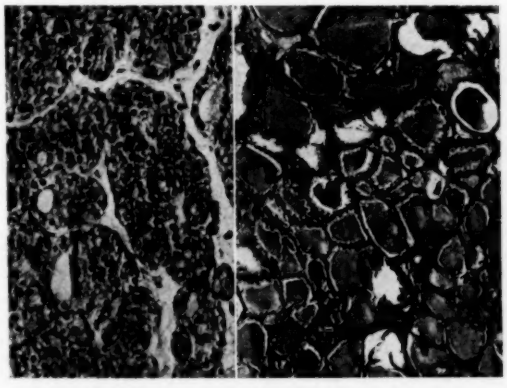

FIG. 3.—Thyroid of normal rat aged 21 days. There is very little colloid. (× 100.)

FIG. 4.—Thyroid of an abnormal rat aged 21 days. The magnification (× 50) is half that of Fig. 3. Note the enormous colloid-filled vesicles and the darkly stained fibrous tissue which separates them.

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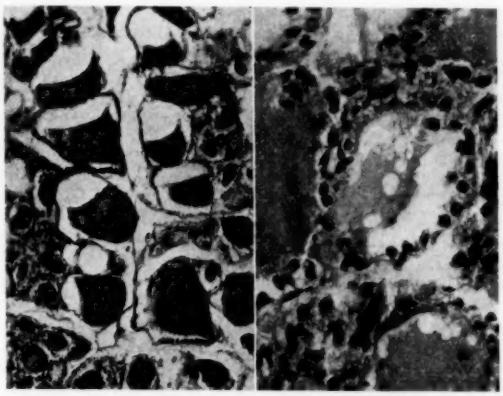

FIG. 5.—Thyroid of an adult E-deficient rat. (× 100.) The vesicles are filled with colloid and there is some fibrous tissue.

FIG. 6.—Normal adult thyroid. (× 500.) The cells are actively secreting and are large with well-marked nuclei.

One gland examined was particularly interesting as it was obtained from an animal whose mother had been partly E-deficient and the animal had never had access to a diet containing adequate vitamin E. On attaining puberty it was mated with normal males but although it had six normal matings, placentation never took place. The animal retained a youthful appearance and had silky fur instead of the normal hard fur characteristic of the adult rat. It was killed and its organs examined histologically. The thyroid was very hypoplastic and the ovaries showed no normal follicles. The anterior pituitary appeared at first examination to be entirely undifferentiated, as the acidophils were almost completely degranulated and some of them were very small. A few of the acidophils were vacuolated and there were many empty cells. There were very few basophils and these were only sparsely granulated. The general appearance was like that of a gland composed entirely of cells of the chromophobe type.

There is no doubt that vitamin E alone will cure the sterility produced by its deficiency, and it has been proved in this laboratory in large series of rats that both sterile animals and animals which have had litters of cretinous young will produce and rear normal litters if adequately dosed with a concentrate of vitamin E within the first three days of pregnancy, and it can be assumed that these thyroid and pituitary changes observed in E-deficient animals are entirely due to the absence of this vitamin. It is known that the secretions of the anterior lobe of the pituitary gland are necessary for normal pregnancy, and since deficiency of vitamin E affects both gestation and the anterior pituitary, it may be assumed that this vitamin is necessary for the normal function of the gland.

DISCUSSION

It is suggested that failures of the normal reproductive process, of lactation, and of the activity of the

thyroid gland in E-deficient rats show that the secretion of the gonadotropic, galactotropic, and thyrotropic hormones by the anterior lobe of the pituitary gland is impaired. This evidence is further substantiated by the histological findings. The basophils of the anterior pituitary of sterile doses

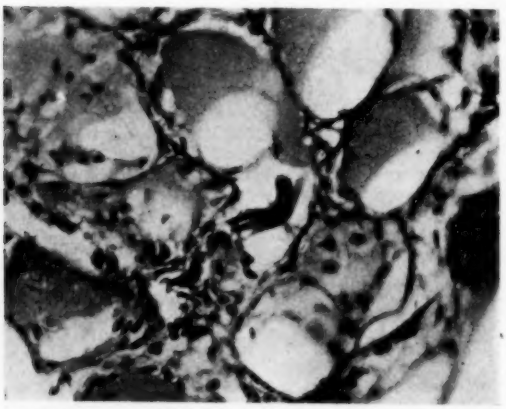

FIG. 7.—Hypoplastic thyroid of sterile E-deficient rat (adult). (× 500.) The accumulated colloid has flattened the cells round the vesicles.

show some degree of degranulation, and since castration results in degranulation and vacuolation of these cells in rats (Ellison and Wolfe 1934), it may be presumed that there is some decrease in their activity. Similar changes in the basophils have been found to follow castration in man (McCallum 1936).

In the sterile rats and in the abnormal young the acidophils are degranulated, and in extreme cases degenerated. The acidophils in the rat are associated with the activity of the thyroid (Severinghaus 1933), and it has been found that in man they are associated with growth, since an eosinophil adenoma is often found in cases of gigantism or acromegaly (Cushing 1933). In mice it has been found that congenital dwarfs of the Dunn strain have no acidophilic cells in the anterior pituitary (Smith and MacDowell 1930). The stunted growth and abnormal appearance of the young rats, combined with the pituitary and thyroid changes observed, suggests that the condition is probably pituitary dwarfism with secondary cretinism.

The site of secretion of the galactotropic hormone is unknown. As would be expected the acidophils of the pituitary glands of the E-deficient young are degranulated and decreased in size, thus accounting for the stunted growth and the inactive state of the thyroid in these animals.

Similar changes in the acidophils of the male rat anterior pituitary have been described by Severinghaus, Smelser, and Clark (1933) following thyroidectomy. The histories of the litters of partially E-deficient rats given in Table I indicate that the galactotropic and thyrotropic factors are influenced by deficiency of the vitamin before the gonadotropic, because the rats are able to produce an approximately normal number of young but are unable to rear them.

SUMMARY

The pathological changes produced in female rats and their young by deprivation of vitamin E are described and the conclusion is drawn that, in the rat, vitamin E is necessary for the normal function of the anterior lobe of the pituitary gland. Female rats which are partly deficient in this vitamin will produce a living litter but are unable to rear it.

The young grow more slowly than normal young rats and are obviously abnormal in appearance a fortnight after birth; a few days later flaccid paralysis of the limbs and often spasms of the feet are observed, and the animals die within a few days. In 82 of these young rats, in which microscopic examination of many of the tissues has been made post mortem, hypoplasia of the thyroid was found in every case. The anterior pituitary has been examined in 20 cases and degenerative changes have been found. It is suggested that the condition is one of pituitary dwarfism with secondary cretinism.

In 23 female rats in which sterility had been produced by a more complete deficiency of vitamin E microscopic examination of the tissues showed hypoplasia of the thyroid and degranulation of the acidophils and basophils of the anterior pituitary gland. When given an adequate dose of a vitamin-E concentrate, however, such sterile animals will produce and rear a litter of normal young.

I wish to acknowledge the help I have received from Miss M. Allanson in the examination of the pituitary glands and the coöperation of my assistants, Miss I. Harley and Mr. W. R. Searle, throughout the experiments. My thanks are also due to Mr. F. H. Carr, D.Sc., and Dr. S. W. F. Underhill for their encouragement, and to the directors of The British Drug Houses Ltd. for permission to publish this work.

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EXTREME DEGREE OF LEUCOCYTOSIS IN WHOOPING-COUGH

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G. H. NEWNS, M.D., M.R.C.P. Lond.

MEDICAL REGISTRAR AND PATHOLOGIST AT THE HOSPITAL FOR SICK CHILDREN

A BOY, aged 5½ years, had his tonsils removed on Oct. 31st, 1936. A cough developed shortly afterwards. He frequently vomited with the cough. There was a small amount of sputum. He was admitted to hospital on Nov. 6th, 1936.

His past history was uneventful. On examination his face was pale and his alæ nasi were working. The respiration-rate was 70–80 and the temperature swung between 101° and 103° F. A striking feature was the pallor and lethargy which the child displayed. There was slight impairment of percussion note over the base of the right lower lobe. Pleural rubs were audible in the right axilla

and numerous râles were to be heard all over the right lung. The heart was normal. The tip of the spleen was palpable on deep inspiration but the liver was not felt. There was no lymphatic gland enlargement. In the tonsillar fossa remains of sloughs were to be seen. A diagnosis of post-tonsillectomy broncho-pneumonia was made. Radiography of the chest confirmed the presence of pneumonia in the right lower lobe.

The first blood count was done on Nov. 10th, four days after admission: red cells, 2,975,000 per c.cm.; hæmoglobin, 51 per cent.; colour-index, 0·9; white cells, 145,000 per c.mm. (polymorphs 40 per cent., lymphocytes 53 per cent., monocytes 6 per cent.) Anisocytosis, poikilocytosis, and polychromasia were present. A second blood count on the following day showed a leucocytosis of 145,000 per c.mm., of which only 29 per cent. were polymorphs; 52 per cent. were lymphocytes and 12 per cent. of doubtful cells were present. In view of these findings, lymphatic leukæmia was strongly suspected, though it was recognised that the mature appearance of the lymphocytes was much against this diagnosis.

On the seventh day in hospital the patient's temperature began to fall and reached normal 36 hours later. The respiration-rate fell more gradually. The general condition improved up to a point but he still remained pale and lethargic. The signs in the right lung persisted for a considerable time. On Nov. 18th the leucocyte count was 140,800 per c.mm. (polymorphs 40 per cent., lymphocytes 56 per cent.). On Nov. 25th it had fallen to 36,300, the proportion of lymphocytes then being 70 per cent. This fall continued steadily and by the beginning of January, 1937, the leucocyte count was 11,000 per c.mm. On Dec. 20th the child was heard to whoop for the first time. It was the typical whoop of whooping-cough and continued for many weeks—throughout January and the early part of February. Other cases of whooping-cough appeared in the ward on Dec. 13th, 18th (two), and 26th. From January onwards, the leucocyte count remained at

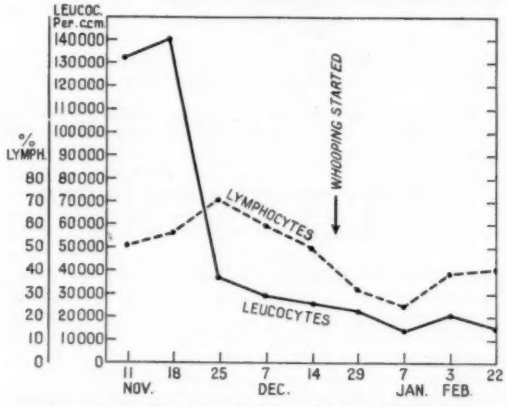

Chart showing white cell counts during the illness.

normal levels. The last one before discharge (March 16th) was 11,200 per c.mm., 71 per cent. being lymphocytes. There was still a slight anæmia.

DISCUSSION

Since Fröhlich in 1897 first observed that the leucocyte count in whooping-cough was raised, this investigation has become a useful aid to diagnosis. Churchill (1906) stated that leucocytosis occurred in 85 per cent. of cases, and it was present in every one of the 65 cases of Begg and Coveney (1935).

Some difference of opinion exists about the phase of the infection during which this change occurs. Sauer and Hambrecht (1931) stated that it was greatest at the height of the paroxysmal stage; at the beginning and end of the infection there was often a leucopenia. Churchill (1906) and Whitby and Britton (1935) think that the leucocytosis starts in the catarrhal stage. There is, however, general agreement that the count falls rapidly to normal soon after whooping commences. In the present case, the leucocytosis appears to have started in the catarrhal stage, to have lasted, though to a lesser degree, during the paroxysmal stage, and to have subsided soon after the commencement of whooping.

Besides the absolute leucocytosis there is often, though not always, a relative lymphocytosis, which may reach a level of 60 to 70 per cent. This rise, though considerable, is not so striking as at first it appears to be, since in children the lymphocyte level is higher than in adults. Up to about the age of 4 the lymphocytes exceed the polymorphs in number and the adult proportions are not reached until the age of 12. It will be seen from the accompanying Chart that in this child there was an initial rise to 50–70 per cent., followed by a gradual fall to 30–40 per cent., which represents the average level for this age.

Counts of 20,000 to 30,000 per c.mm. are common; occasionally one over 50,000 is seen. Very high counts are exceptional and only a few examples are on record of any exceeding 100,000 per c.mm. Cabot (1913) quotes a case of whooping-cough complicated by pneumonia in which there were 94,000 leucocytes per c.mm.; 74 per cent. were lymphocytes. Bourne and Scott (1922) reported a case in which the count reached a level of 176,000 per c.mm., 66 per cent. being lymphocytes. This leucocytosis occurred in the paroxysmal stage and fell to 50,000 in ten days.

It is an interesting fact that in this case as well as in the two others quoted broncho-pneumonia was associated with the extreme degree of leucocytosis. This complication may have contributed at the most 20 to 30,000 leucocytes per c.mm. to the total count, though in point of fact the count remained at the same high level for several days after the temperature had fallen to normal. If the presence of the pneumonia had been reflected in the blood count one would have expected an increase in the proportion of polymorphs during the acute phase. This did not occur.

Because of the high leucocyte count and the relative lymphocytosis, lymphatic leukæmia had to be considered as a possible diagnosis. In lymphatic leukæmia in children striking variations of the leucocyte count are met with both from case to case and also in the individual patient. In all but the very exceptional case, however, the lymphocytes are immature in type and this feature of the blood picture is therefore much more valuable diagnostically than either the proportion of lymphocytes or the level of the leucocyte count. In this patient the lymphocytes were mature.

SUMMARY

1. A case of whooping-cough is described with a very high leucocyte count and a relative increase in the lymphocytes. Unlike those in lymphatic leukæmia these were mature in form.

2. Such high counts are extremely rare and seem to be associated with a complicating broncho-pneumonia. In the present case there is little evidence that it has influenced the blood picture.

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CLINICAL AND LABORATORY NOTES

A NEEDLE IN THE POSTERIOR PHARYNGEAL WALL

By J. M. Greenwood, M.D. Manch., D.P.H.

DEPUTY MEDICAL SUPERINTENDENT OF THE WITHINGTON HOSPITAL, WEST DIDSBURY, MANCHESTER

A woman, aged 63, was admitted to Withington Hospital on Jan. 8th, 1937, with a note from her doctor stating that on that date she had collapsed in the street. The patient had attended our diabetic clinic for some time, and her blood-sugar was controlled by diet.

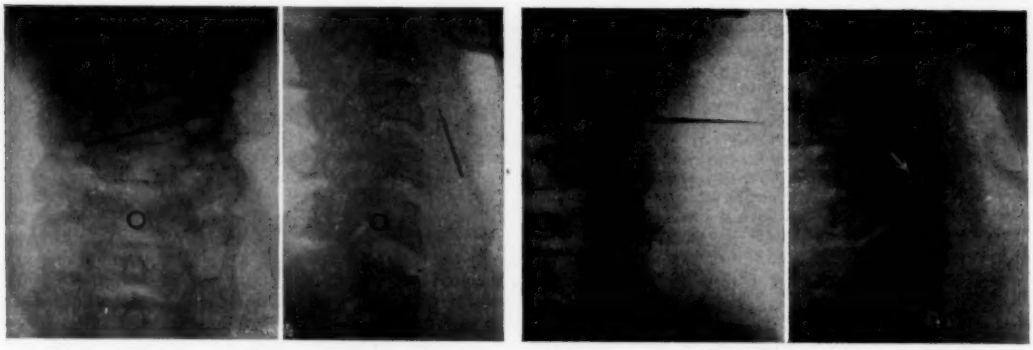
On examination she was found to be in poor general condition, but no organic lesion was detected and her blood-sugar estimation on the following morning was 77 mg. per 100 c.cm. of blood.

On Jan. 9th she complained of a pricking sensation in her throat and some difficulty in swallowing, but no abnormality was found on clinical examination. An X ray examination was performed by Dr. W. H. Hooton, who reported the presence of a needle lying horizontally on a level with the disc between the third and fourth cervical vertebræ. A lateral view of the barium-filled pharynx showed the needle to be lying in a ridge of soft tissue which projected from the posterior wall into the lumen of the gullet. The patient was told of the presence of the needle and asked if she could explain how it got into that position. She stated that she had no recollection of ever swallowing a needle, but advanced the following hypothesis: On the day before admission she had been sitting at home by herself sewing when her niece rushed into the house saying that a near relative had died suddenly. The patient fainted and the niece rushed from the house in a fright to call assistance. It was thought that she might have had the needle in her mouth at that time and that the needle was thrown to the back of her mouth when she fainted and fell to the floor.

A few days later her symptoms disappeared, and Mr. Neville Young, the consultant laryngologist, did not advise immediate operation. The patient was discharged from hospital on Jan. 29th and instructed to report at once if she had any further discomfort.

She reported on Feb. 15th for a routine blood-sugar estimation and drew my attention to a lump on the left side of her neck, asking if it "was anything." A raised, red indurated area was found but without any sign of suppuration, and in view of the previous history it was considered possible that the needle had worked its way to the surface. The needle could not be palpated on gentle examination but an X ray showed it to be lying transversely with the point just below the skin. A sharp pressure on the skin brought the point to view, but a small incision was necessary to enable it to be drawn through the thickened and fibrous subcutaneous tissue. The needle was of the ordinary round-bodied sewing pattern and measured 1¼ in. in length.

The case appears to be of interest in that the patient was not aware she had swallowed the needle, and that symptoms did not develop until, presumably, two days after the event. On its way to the surface the needle would pass in close proximity to the great vessels of the neck, without apparent injury.



A B

Antero-posterior and lateral radiograms showing position of needle. A, on the day after probable date of its entrance. B, five weeks later, before extraction. The circles mark the fourth cervical vertebra.

My thanks are due to Dr. Mercier Gamble, medical superintendent of the hospital, for permission to publish this case.

PALPABLE EPITROCHLEAR GLANDS

THEIR VALUE AS A PHYSICAL SIGN

By Griffith Evans, D.M. Oxon., F.R.C.S. Eng., D.O.M.S.

FORMERLY HON. SURGEON TO THE CARNARVON AND ANGLESEY INFIRMARY

Two major advances in syphilology await application to general medicine—namely, the discovery of the spore stage in the life-cycle of the spirochæte and of the lymphophilic character of the virus in the latent period.

The active spirochætal stage is well known and is usually diagnosed by pathognomonic signs or by serum tests. There is general reluctance to diagnose the disease in the absence of positive serum tests, but syphilologists have repeatedly shown that the Wassermann test is more often negative than positive in the latent period and that a negative reaction is the rule in adults born with syphilitic infection. Harrison (1931) has collected 6829 cases, of which the Wassermann reaction was positive in 45·6 per cent., and at the Copenhagen Conference of Pathologists in 1928 where the W.R. was compared with the Kahn and other precipitation tests, the W.R. was positive in only 208 out of 496 cases of syphilis.

How then are we to diagnose latent syphilis in the absence of a positive W.R. ? The main foundations of diagnosis must be personal and family history and argument from the morbid anatomy. The latent stage begins in both acquired and congenital disease when the spirochæte is swept up into the lymphatic system. The main paravertebral chain of glands receives the major part of the infecting organism and the disease is only truly latent when there is no inflammatory response. Frequently however an ebb and flow of chronic lymphatic infiltration from these glands affects neighbouring structures; this has been recognised as the fundamental cause of aortitis and aneurysm. I have endeavoured to show in my book, "Latent Syphilis and the Autonomic System," that immediate anatomical relations other than the aorta are similarly affected. But if the W.R. is negative how can we recognise the true nature of these disorders ? There are a number of minor signs, among them palpable epitrochlear glands, which though not pathognomonic should direct the physician's mind to latent syphilis. In the absence of focal sepsis bilateral palpable glands indicate a general lymphadenitis, and in my experience the cause in one-half is syphilis and in the remainder chronic microbic infection of uncertain nature expressed clinically, or accompanied by, such various states as arthritis, chronic peptic ulcer, diabetes, or valvular disease of the heart. The text-book causes—lymphatic leukæmia, Hodgkin's disease, &c.—are rarities in everyday practice. In five years I have met with 100 instances of enlarged epitrochlear glands, and have compared them with 100 consecutive patients of all sorts, and with 100 consecutive cases of latent syphilis. Briefly the results are as follows:

1. Of 100 cases with enlarged epitrochlear glands, 50 were syphilitic.

2. Of 100 consecutive cases of latent syphilis, 25 had palpable epitrochlear glands.

3. Of 100 consecutive cases of all sorts 10 had enlarged epitrochlear glands and of these 5 were syphilitic.

It is not possible to compare this sign with the Wassermann test, for whereas the W.R. is positive in approximately 50 per cent. of latent syphilitics, its presence always indicates the disease. Enlarged epitrochlear glands, on the other hand, are found in 25 per cent. of these cases, and of those who have the sign only one-half are syphilitic.

As a physical sign, therefore, enlargement of epitrochlear glands ranks with unequal reacting pupils, atrophic glossitis, tender aorta, and certain allergic phenomena. It is not pathognomonic but it calls for direct exclusion of chronic syphilis by a method which relies more on history and argument from pathology than on any laboratory test.

Reference.—Harrison, L. W. (1931) Diagnosis and Treatment of Venereal Diseases in General Practice, 4th ed., p. 257.

BRITISH MEDICAL ASSOCIATION

MEETING IN BELFAST

PROCEEDINGS OF THE REPRESENTATIVE BODY

(*Concluded from p. 195*)

Hospitals Policy

THE B.M.A. council had considered the report of the Voluntary Hospitals Commission, which Dr. PETER MACDONALD (chairman of the hospitals committee) said was concerned chiefly with the coöperation and coördination of the existing system. The Commission recommended the division of the country into hospital regions, and the grading of hospitals into central, district, and cottage hospitals. There was a valuable suggestion promoting earlier discharge and relieving the waiting-list by setting up auxiliary hospitals to play the rôle of improved convalescent homes. The Commission had endorsed the policy of the association that out-patient departments should be for consultation and emergency, no general treatment being given there. An exception, it was suggested, should be made for the dependants of lower wage-earners who did not join the public medical service; but this proposal was based on the prejudice against poor-law medical service which would cease when domiciliary attendance was brought into effect. The policy of providing pay-beds for all classes of the community was adopted, and the principle of payment of the visiting medical staff, with certain reservations, was approved. In its evidence before the Commission the B.M.A. had emphasised the need for hospital beds to which general practitioners should have access for the treatment of their own patients; but no notice, it seems, had been taken of this plea. The Commission had stated that nursing hours were too long, that 48 hours a week was the ideal, but that at the moment this was unattainable. "What makes it unattainable," Dr. Macdonald said, "is saying and thinking that it is unattainable. Hospitals have no more right to exist on the charity of nurses than on the charity of doctors." Local authorities in general were niggardly in their attitude to hospitals, and it would be in their own interest, as well as their duty, to be more generous, for if the voluntary system collapsed a heavy burden would be thrown on the authorities. This might have been more explicitly indicated in the report which, as a whole, went far to solve the problem of the voluntary hospital.

Dr. C. E. S. FLEMMING (Bradford-on-Avon) urged members of the medical profession to be prepared for the changes that would take place under the system of hospital regions, and to ensure that they were properly represented on the regional councils.

Private or Public Practice

The recently published report of the Departmental Committee on Scottish Health Services has been considered by the B.M.A. council which finds in it a thorough and authoritative endorsement of its own health policy. Dr. J. B. MILLER (chairman of the health services committee) reminded the meeting that the health services had developed in a haphazard way according to the needs of the times at which their numerous parts had been evolved, and the first essential was to integrate these services into a national health policy comprehensive enough to cover the whole field of morbidity. Every member of the community should have available the services of a general practitioner. At present many had not this facility, and local authorities were trying to repair the omission by the promotion of whole-time services, a tendency which would gather force unless a definite national policy was framed.

Dr. HOWARD STRATFORD (Kensington) wanted the council to stress the importance of the general practitioner's part in the health services. In view of the forthcoming propaganda campaign for health education, the Ministry of Health should be asked to "star" the general practitioner. He suggested such slogans as "Have you a family doctor ? If not, get

one," and "Consult your family doctor." Dr. H. A. NATHAN (Kensington) said the need for propaganda was becoming more and more recognised, but it must be well balanced and show a proper perspective on all the health services. There should be explanatory posters in doctors' waiting-rooms showing patients how to get the services.—Dr. H. ROSE (Wendover) thought there was too much propaganda already and people were being taught to become introspective.—Dr. E. R. C. WALKER (Aberdeen) said that medical service must develop either on public health or on general practitioner and health insurance lines. He was convinced that the latter was the right course, but the profession itself must be persuaded of that fact. The future medical service should be based on the family doctor, but it was not clear whether or not this was the policy of the Ministry of Health.

Feeling His Feet

Newcastle (Dr. T. CRAIG) thought that after passing the qualifying examination all doctors should spend six months as assistants in an approved practice or dispensary before being registered to practise. Too many were entering the public health service without experience of the practical troubles and trials of general practice, and the younger generation of practitioners were missing something which could never be got otherwise than as assistant in general practice.—Dr. J. H. THOMPSON (Croydon) said that an ever-increasing number of young men, and many of them the best students, were devoting themselves to the academic rather than the clinical side of medicine. It would be hard on them to be asked to spend six months in general practice or dispensary work before being registered to practise. The system would make it possible for an unscrupulous doctor to take these young assistants one after another and work them like slaves.—Dr. E. R. C. WALKER said that after passing the qualifying examination with fair success one was not completely a doctor, and he did not think that fitting on six months in a practice or dispensary would meet the difficulty. A better plan, he suggested, would be not to allow a doctor to practise unsupported and with sole responsibility until he had been working two or more years as assistant or partner. It was impossible to learn general practice in six months.

Sir KAYE LE FLEMING said they were all in sympathy with the desire to help the almost qualified doctor to obtain experience, and the association had brought before the General Medical Council its policy that, without lengthening the curriculum, six months at the end of the 4½ years' course of medical training should be devoted to special responsibility. Various methods of achieving this were set out in a memorandum—residence in hospital, apprenticeship to a competent practitioner, and so on. The G.M.C. had, however, considered the proposal impracticable, and had not included it in the new curriculum.—Dr. CRAIG withdrew his motion.

Instruction in Medical Ethic

Dr. S. WAND (for Birmingham Central) moved that universities should be asked to arrange for the instruction of medical students in their final year on professional customs and obligations.—Dr. D'EWART said that such lectures had been given in Manchester for six years, with great acceptance.—Dr. WATERFIELD thought that many questions referred to his committee for advice might well be dealt with in such lectures.—Sir KAYE LE FLEMING said there had recently been a great advance in education of students in this way, similar instruction having been arranged by the organisation committee.—Dr. WAND hoped that lectures on insurance practice would not be mixed up with those on professional customs.—The motion was accepted.

Oculists and Opticians

Mr. BISHOP HARMAN (chairman of the ophthalmic committee), reporting on the National Eye Service, said that the cases dealt with in 1936 showed an increase of 23 per cent. over the previous year—an indication, he thought, of the success of educational propaganda. Some excellent posters had been widely applied for and films illustrating the need for skilled examination of the eyes had been in circulation.

Last autumn, said Mr. Harman, proposals had been made by the Ministry of Health to establish a register of opticians in connexion with ophthalmic benefit, and to supply a scale of charges for the supply of optical appliances. The association had taken a strong deputation to the Minister in November as a result of which the amending regulations (still only in draft) gave no official recognition to sight-testing by an optician, in spite of opposition on the part of the opticians and pressure in Parliament. The public had been taught to have their eyes examined by qualified medical practitioners. The eye, as Mr. Harman put it, was not like a lens or opera glass; it was part of the living body, and the only person fit to examine it was one specially trained in knowledge of the living organism. Pressure should be brought to bear on the public through the People's League of Health, the National Committee on Blindness, and the public health service.

Mr. H. CAIGER (Sheffield) divided sight-testing opticians into three classes. The first was A1—a group who desired to work in coöperation with the medical profession and who did not profess to be equal in efficiency with the qualified practitioner. Some of these opticians went out of their way to persuade their customers to consult a medical practitioner when they felt it was necessary (one of them had lent a patient £1 to pay Mr. Caiger's fee). The second class were highly qualified in the knowledge of glass, and their very qualification constituted their danger. They would assert that they were as well qualified to test refraction and to say whether there was anything wrong with a patient's eyes as a doctor. With the aid of resounding titles they persuaded the uninitiated that they held official qualifications equal to a medical degree. Some even claimed to be able to diagnose glaucoma. The third (and worst) class were out to exploit customers for their own profit.—Dr. BERTRAM SMITH (Nottingham) said that in many cases if an examination by an ophthalmic surgeon was required a special reason must be stated by the doctor. It had been said that if a doctor told his patient that his eyes required examination, the examination would automatically be made by an ophthalmic surgeon, but this was not by any means always the case; and Dr. G. F. P. GIBBONS (Northants) asserted that, even when a doctor recommended a patient to have his eyes tested, this was apt only to be carried out if the optician concurred.

Mr. HARMAN suggested that, apart from certification for ophthalmic benefit, it was in the interest of those who needed to have their eyes examined that it should be done by a qualified ophthalmic surgeon.

Dr. C. M. STEVENSON (Cambridge) spoke of the value of an ophthalmic collective advertising campaign for which he would gladly surrender the floating 6*d*. of the 10*s*. 6*d*. fee, and in this there was general agreement.

On the question whether the association should or should not be represented on the ophthalmic benefit committee, Mr. HARMAN said that if the Ministry invited them to send someone to observe the proceedings they would accept in that capacity only.

Fees for Life Assurance

Dr. D. V. M. ADAMS (Lanark) asked that the minimum fee for medical examination and report for life assurance should be 10*s*. 6*d*. This was, he said, a question of a sliding scale. Insurance societies often worked on a basis of a fee of £1 1*s*. for an examination for a £100 policy and 10*s*. 6*d*. for a smaller policy. In some cases a large amount of work was put in and a fee of 5*s*. 2*d*. would be received.—Hampstead moved that the minimum should be £1 1*s*.—Dr. A. B. MURRAY (Banff) said the examination was the same whether the policy was for £1000 or for a much lower sum, and Dr. HOWIE WOOD (Isle of Wight) said it had been agreed last year that 10*s*. 6*d*. should only be accepted if the form to be filled up was shortened and simplified.—Dr. J. W. BONE said the policy of the association, set out in 1920, was working satisfactorily. It had made a sort of bargain in connexion with three kinds of insurance:

(1) A medical examination for industrial insurance, with two fees—5*s*. for a simple and 10*s*. 6*d*. for a more elaborate form; the first was quite a simple examination and did not include testing the urine or taking the blood pressure; (2) an examination carrying a fee of 10*s*. 6d. for life insurance policies up to £100 and £1 1*s*. for larger policies; (3) an intermediate form, longer and more careful than that for industrial insurance, the fee to be £1 1*s*.

If an attempt was made to get rid of the 5*s*. fee, the result would be that insurance would be carried on without any medical examination at all. He urged the meeting not to press for a minimum of either a guinea or half a guinea. It would not please the rank and file, and was not a practicable proposition.—The Hampstead amendment was lost.

Dr. NATHAN said that an examination ought to *be* an examination, and should include such matters as examination of urine and blood pressure. If doctors were content to stick to a fee of 5*s*. they would never get more, and Dr. MURRAY felt strongly that the higher fee should be pressed for.—On being put to the vote the Lanark motion was approved by 61 to 59, but on a division it was lost by 94 to 72 votes.

Psychology of War

Dr. J. NUNAN (Sheffield) moved the appointment of a committee to consider the psychological causes of war, and to press for an international section under the health organisation of the League of Nations to deal with the subject. War, he said, was barbarous, futile, and disastrous to victor and vanquished alike. All organisations existing for the benefit of humanity should exercise their influence against war, and the medical profession should take the lead by reason of its great authority and prestige.—Mr. CAIGER described war as "the criminal insanity of humanity." If our profession, he said, has to do with mental disorder, and if psychology comes within the province of our profession, then we have to deal with the psychology of war. The Netherlands medical association, which had been working on the subject for six years, had appealed to the B.M.A. to give the support of their wider influence.—Dr. A. T. JONES (Glamorgan) remarked how widely different mass psychology was from individual psychology; surely it was the business of the medical profession to lead and direct thought in this matter.

Mr. HARMAN was persuaded that whatever action was taken must be international, and on his proposal it was decided by a large majority not to set up a committee of the association but to press the need for action on the League of Nations.

Aliens on the Medical Register

Dr. ERNEST WARD (for Torquay) asked how many new members enrolled during the past five years were non-nationals of the refugee type, and what further action had been taken since the 1936 meeting to limit their admission to the Medical Register.

Dr. J. C. MATHEWS (chairman of the organisation committee) replied that between 1931 and 1936 138 non-nationals had been enrolled, being 1·5 per cent. of new applications. From October, 1936, to June, 1937, there were 26 (or 1·6 per cent.). No permits had been issued by the Home Office during the past twelvemonth, and it was clear that these 26 had received their official permits at an earlier date.

Topics in Brief

Certain resolutions which led to but little discussion were of interest in themselves. A motion by Torquay that medical practitioners should not consult other than medically qualified radiologists was held to be outside any formal ruling. The opinion was expressed, however, that, while a registered radiographer might suitably be employed to take X ray photographs, these should only be interpreted by a medical practitioner, and the matter was referred to the ethical committee.

Dr. WATERFIELD (chairman of this committee) raised the question whether the practice of putting surgery hours and other information on medicine bottles was desirable. It was now compulsory in insurance practice for the doctor's name to appear on bottles containing poison, but the meeting did not like the idea of adding his consulting hours and such like.

Dr. HENRY ROBINSON (chairman of the charities committee) said there had been a slight falling off in the amounts collected and distributed through the charities trust fund during 1936. Members of the profession did not support medical charities as well as they ought, and he pleaded with doctors to remember them when making their wills. He had made investigations from which it appeared that, if every member of the profession able to provide amply for his dependants were to leave half of one per cent. of his estate to medical charities, the difficulties of those charities would largely disappear.—The Rev. S. D. BHABA, M.D., the Syrian orthodox patriarch of Antioch who has been a member of the association for 56 years, said that if all the members saved one cigarette every day they could raise £30,000 a year for medical charities.

As his last word from the chair Mr. SOUTTAR expressed the indebtedness of the body to Mr. H. Cooper who had reported its proceedings for more than 30 years.

ANNUAL DINNER

The King's Hall at Balmoral was transformed on the evening of July 20th into a gigantic banqueting room with a specially laid dancing floor. It was in the words of the local press the largest dinner ever held in Ireland. Prof. R. J. Johnstone presided. The Duke of Abercorn, Governor of Northern Ireland, replying to the toast of his health, assured his medical guests that it had already acted. In the absence of the Prime Minister, who was taking a short rest on

medical advice before the Royal visit, Mr. J. M. Andrews, Minister of Finance, proposed the toast of The British Medical Association, mentioning the great boon to Northern Ireland of the medical benefit scheme. Sir Kaye Le Fleming, in responding, admitted that the health of the Association had never been better than at that moment. He went on to deprecate the tendency of drawing the health services into the political arena before they had been well matured in the medical mind; and in view of the proposed fortnight's holiday for the whole industrial population he offered the help of the medical profession in the problem, scientific and psychological, of the enjoyment of leisure. Sir Kaye then toasted The City of Belfast and Queen's University, to which the Lord Mayor, Sir Crawford McCullagh, responded on behalf of the city, and Lord Londonderry on behalf of the university. The latter recalled the late Sir William Whitla's presidency on the occasion of the B.M.A.'s last visit and found the highest tribute to medicine in the growing prosperity of the insurance companies which, owing to the increased expectation of life, were now paying bigger dividends and better bonuses. Prof. C. G. Lowry proposed The Guests, welcoming delegates from all parts of the Empire whom he described as ambassadors of peace. Sir Charles Blackburn, representing New South Wales, and Dr. Morris Fishbein, delegated by the American Medical Association, responded to the toast. In the final toast of The President, Prof. P. T. Crymble included Mrs. Johnstone and the versatile secretaries of the local committee, Dr. F. M. B. Allen and Dr. R. W. M. Strain. Prof. Johnstone in replying was received with the Queen's war-cry.

THE GRADUATION CEREMONY

In the great hall of Queen's University on July 22nd, Lord Londonderry, as Chancellor, conferred the honorary degree of doctor of laws upon Dr. Anderson, Sir Farquhar Buzzard, Dr. Morley Fletcher, and Prof. Hey Groves, and the honorary degree of doctor of science upon Prof. Bedson and Dr. Felix. The distinguished visitors were presented to him by the deans of the respective faculties in brief speeches that may be summarised as follows:—

DR. G. C. ANDERSON

Dr. Anderson has held the important post of medical secretary to the British Medical Association since 1932. He has brought to the consideration of the questions which concern the association a clear and balanced mind, in sympathy with the difficulties of a general practitioner, which he had himself experienced for more than ten years, but determined that medicine should be so organised as to function with the greatest possible efficiency in advancing and maintaining the health of the community. In addition to his contributions on the structure of medical services, he has published articles on the problems of hospital policy and medical practice, nor may I omit a reference to the part he played in the erection of the splendid buildings in Tavistock-square.

SIR FARQUHAR BUZZARD

The medical profession and the general public have long held in great respect the many services to medical education and to medical scholarship, particularly neurology, of the distinguished past president of the B.M.A. His record as a student was an unbroken series of distinctions, and he is as vigorous in body as in mind, obtaining a Soccer Blue at Oxford, and playing for the Old Carthusians while at St. Thomas's, during which time they twice won the Amateur Cup. Oxford has been able to recognise by name two aspects of his career, for while the University caused him to be appointed regius professor of medicine, Christ Church has made him one of its students. But it is as an administrator that he has lately won distinction, as a member of the hebdomadal council. More recently he has been one of that body of men gifted with esoteric abilities which control the powers of Moses and Midas and by their touch have produced a stream of gold which is a source both of envy and of sincere congratulation.

DR. H. MORLEY FLETCHER

Dr. Fletcher commenced his medical studies at Trinity College, Cambridge, St. Bart.'s, Freiburg, and Vienna. As might be expected from one who listened so intelligently to so many different orthodoxies he has one of the most acutely critical minds in medicine. One of his earlier publications was "On the *so-called* periarteritis nodosa." His detection of error is exercised not only on scientific hypotheses but also on conjectures contained in certain monographs whose utility is most doubted by their authors. There are few medical men who have not been examined by Dr. Fletcher; he is examiner in medicine to Queen's, National, Durham, Cambridge, Manchester, Sheffield, the Conjoint, and the Society of Apothecaries. One-half of the students who fail in their examinations ascribe their lack of success to the perverse blindness of examiners; Dr. Fletcher continues in his offices because he combines with intellectual intrepidity great moral bravery, or perhaps he relies on that half of the students who pass their examinations and rightly ascribe their success to the kindness of examiners. As a student of comparative orthodoxy Dr. Fletcher no doubt regards a howler as a heresy—part of the science of the future. But I must not place a false emphasis on one part only of Dr. Fletcher's activities; as the medical profession well know, he is a most distinguished physician, and by his writings has done much to advance the science of medicine.

PROF. E. W. HEY GROVES

Prof. Groves has been eminent both as a surgeon in uniting fractures of the body natural and as an administrator in preventing fractures of the body politic. His main work has been done in his natal city of Bristol, of whose hospital he is senior surgeon, and of whose university he is emeritus professor of surgery. But his work for orthopædics has won for him universal renown, and the subject has been greatly enriched by his writings. The general literature of surgery owes much to his labours as editor of the *British Journal of Surgery*. The esteem in which he is held by his colleagues is evidenced by his election in 1928 to be vice-president of the Royal College of Surgeons of England, and in 1929 president of the Association of Surgeons of Great Britain and Ireland.

PROF. S. P. BEDSON, F.R.S.

Prof. Bedson obtained the degree of bachelor of medicine, with honours, at Durham in 1912, and from 1913 to 1914 was a B.M.A. research scholar at the Lister Institute. During the war he served for two years as a combatant officer, but, after being wounded at Gallipoli, he was transferred to the R.A.M.C., becoming assistant adviser in pathology to the Fifth Army in 1918. After two years at Newcastle he returned to the Lister Institute in 1921, and in 1924 was seconded for duty under Arkwright in the work of the Foot and Mouth Disease Research Commission. His chief work in bacteriology has been his studies of elementary bodies in virus diseases, studies in which he showed that filtrable viruses react with antibodies in the same way as do ordinary bacteria. These investigations culminated in his discovery and proof that psittacosis is due to a virus. In 1926 Dr. Bedson went to the London Hospital as senior Freedom research fellow, and in 1934 he was appointed to its chair of bacteriology.

ARTHUR FELIX, D.SC.

Dr. Felix graduated in science at Vienna in 1910, and on the outbreak of war in 1914 was appointed a bacteriologist to the Austrian Army. During the war, his work with Weil on the serology of typhus gained for him a world-wide reputation. With the creation of Palestine as a Mandated Territory, Dr. Felix became the chief bacteriologist to the Jewish Hospitals Organization in that country. In 1927 his brilliant work brought him to the Lister Institute, and during the past ten years he has

enhanced his reputation especially by his work on antigenic analysis. His discovery of the Vi antigen of the typhoid bacillus has been a most important advance, both in the domain of preventive and curative medicine. It is a privilege to have on our roll the name of Arthur Felix, a former Austrian, now a British subject, whose labours have been for the benefit of no one single nation but for that of humanity at large.

SECTIONS OF MEDICINE AND OF PATHOLOGY, BACTERIOLOGY, AND IMMUNOLOGY

AT a combined meeting of these two sections Sir THOMAS HOUSTON (Belfast) presided.

Prof. L. J. WITTS (London), opening a discussion on

The Hæmorrhagic States

said that such a complex and interlocking mechanism as was manifest in these states, involving plasma, platelets, endothelial lining of the vessels and connective tissue, was inevitably confusing. He was impressed by the frequency and diversity of hereditary hæmorrhagic diseases and by their resistance to treatment, but thought personally that they were not subject to immutable laws in pattern or in pedigree. The local application of coagulant snake venoms (Macfarlane and Barnett 1934) he considered the only new treatment whose value had been confirmed—liver and œstrin had proved valueless. He and Dr. Macfarlane had had no success in treating 4 patients suffering from hæmophilia with egg-albumin preparations as advised by the Sheffield workers (Timperley, Naish, and Clark 1936). Moccasin snake venom had also proved to be unsatisfactory in his experience in hereditary thrombasthenia and hereditary telangiectasia, while Davidson had found it valueless in idiopathic thrombocytopenic purpura. Prof. Witts said that the latter condition is now well differentiated from other types of purpura. The spleen shows no gross changes though there may be megakaryocyte proliferation in the marrow. It is unknown whether the disease is due to a diminished production or excessive destruction of platelets. The immediate dramatic results of splenectomy he believed to be misleading since half the patients subsequently relapsed, suggesting that removal of the spleen does not affect the fundamental disease process. He did not think that this relapse was necessarily due to the development of a splenunculus. In acute cases medical treatment, notably transfusions, should be tried before resorting to operation. In severe chronic cases, greatly incapacitated, splenectomy should be advised. The isolation of vitamin C Prof. Witts characterised as an outstanding event. This vitamin he regarded as a specific cure for scurvy but as valueless in other hæmorrhagic conditions. The mere association of absence of vitamin C in the urine with bruising or bleeding should not necessarily be considered diagnostic of scurvy. In illustration of this point he described a patient with bruising of the shoulder and diminished vitamin-C excretion who had been shown at autopsy to have peri-arteritis nodosa. The impact of biochemistry on the hæmorrhagic states was, he thought, becoming increasingly important, and he instanced Szent-Györgyi's discovery of vitamin P, the permeability controlling vitamin, the hæmorrhagic chick disease due to vitamin-K deficiency, and the possible effects of vitamin T in thrombocytopenic purpura.

Dr. N. B. CAPON (Liverpool), discussing the hæmorrhagic disease of the new-born, said he had found it to have an incidence of 1 in 400 births. He had had 68 cases under his care, 58 of which had recovered. The ætiology was still obscure; apparently sex, weight at birth, labour, and antenatal conditions did not influence the incidence. Melæna had been the predominant symptom in his series sometimes associated with hæmatemesis; multiple hæmorrhages had occurred rarely. The age of onset he had found to be with rare exceptions between 30 and 50 hours. Post-mortem changes were rare with the exception of occasional slight intestinal erosion or ulceration. He gave blood by intramuscular injection to mild cases and by the intravenous route to more severe cases. It was important to exclude the mother's nipple as a source of the blood before concluding that it came from the child's intestine.

Dr. JANET VAUGHAN (London) subjected the lines of therapy advocated in idiopathic thrombocytopenic purpura to critical review. The available evidence suggested that both vitamin C and vitamin P were of no value. Vitamin T still remained to be further investigated. Hormone therapy also in her view had little to support it, though thyrotropic hormone, ovarian preparations, liver extract, and parathormone had all been advised. The evidence in favour of moccasin snake venom when analysed was not impressive. On the other hand the conflicting reports concerning the value of X ray therapy might point to the existence of two types of case, one responsive to X rays and one resistant. Splenectomy was the treatment of choice; most results in chronic cases seemed to be good—operative mortality being about 7 per cent. The relapses described by Prof. Witts might be due to the development of a splenunculus.

Dr. S. C. DYKE (Wolverhampton) discussed the importance of laboratory investigations in cases of the hæmorrhagic diathesis. In taking blood for a routine count it was essential to note the bleeding-time. This was never prolonged in hæmophilia. In examining stained films he found it possible to assess the number of platelets to some extent. Bone-marrow puncture he regarded as a negative indication to a diagnosis of hæmorrhagic disease. In acute idiopathic thrombocytopenic purpura he had never found the platelet count above 50,000 per c.mm., while in anaphylactoid purpuras the platelets were never, in his experience, below 60,000, the normal limits being 150,000 to 450,000 per c.mm. He held estimations of vitamin-C excretion to be a desirable investigation but doubted whether the accepted standard of Harris and Ray was correct. He had found all hospital patients in a condition of subclinical scurvy by this standard which he did not believe to be true. For the estimation of coagulation-time he preferred the method of Lee and White to that of Dale and Laidlaw.

Dr. R. G. MACFARLANE (London) examined the mechanism of hæmorrhage and hæmostasis. He described experiments made on capillary vessels in the nail bed and on the effect of anticoagulant dyes on the bleeding-time of rabbits. He concluded that hæmorrhage from small vessels is normally checked by their contraction which persists for 2–3 hours, during which period the blood, that has escaped initially, clots and becomes adherent. In his view the period of vascular contraction is followed by one of dilatation, but the firmly attached clot prevents the occurrence of hæmorrhage. He suggested therefore that continued hæmorrhage may be either primary, due to an initial failure of the vessels to contract as in hereditary telangiectasia, or secondary, due to ineffective clot formation as in hæmophilia. The thrombocytopenic purpuras come into both

groups since the prolonged bleeding-time and positive tourniquet test suggest a vascular lesion, whilst the deficient clot retraction leads to secondary hæmorrhage. Dr. Macfarlane mentioned also that he had treated 7 cases of hæmophilia with the Sheffield egg-white substance; in 3 instances the material had been supplied by Dr. Timperley and in 4 he had made it himself according to the published directions. The patients thus treated had not shown improvement.

Dr. W. A. TIMPERLEY (Sheffield), discussing the treatment of hæmophilia, said the value of styptics was limited, since it was essential to check internal hæmorrhage. The original method by which he and his co-workers obtained an effective principle from egg white had been modified, and they now obtained two substances, one of a carbohydrate nature and one amorphous, both of which appeared to be effective. These substances were sterilised by boiling but lost activity by keeping. In some instances they also prepared a substance which prolonged the coagulation-time. Treatment to be effective must, he emphasised, be maintained—a brief course of treatment would not cure. In severe cases he used the intravenous route, in milder cases he gave the substance by intramuscular injection. The dose must, he thought, be varied with the severity of the case, and after prolonged treatment might be reduced. With active preparations the clotting-time should fall to half its original value within 24 hours. He had treated 27 cases for short periods with varying success and 7 cases for at least a year during which time it had proved possible to extract their teeth without undue hæmorrhage. One patient had suffered considerable injuries in an accident with only normal blood loss.

Prof. G. A. CLARK (Sheffield) bore witness to the remarkable clinical results obtained with egg albumin. He thought it was essential to test unknown preparations for potency on animals. He concluded that the action of the effective principle was an indirect one, since it does not reduce clotting-time in vitro and does not antagonise the action of heparin.

Dr. HELEN MACKAY (London) said her experience of the incidence of hæmorrhagic disease of the newborn agreed with that of Dr. Capon. She thought it was essential to give blood at once following even a small hæmorrhage without waiting to investigate further. She regarded as necessary a minimum of 18 c.cm. of citrated blood, and this might be repeated in 12 hours. The oozing following circumcision in some patients might be stopped by similar methods.

Dr. W. R. F. COLLIS (Dublin) described the case of a baby where there had been hæmaturia as well as melæna which had responded well to direct (not citrated) blood transfusion.

Prof. J. W. MCNEE (Glasgow) said that in his experience the spleens from cases of thrombocytopenic purpura were normal in size and histology.

Dr. A. A. MONCRIEFF (London) described a baby born with a purpuric eruption who had been found to have no platelets and a prolonged bleeding-time. The child was transfused and apart from a small epistaxis 5 days later had done well, the platelets being now present in normal numbers. He had found the tourniquet test in children of doubtful value.

Dr. R. E. STEEN (Dublin) said he had found nothing but whole blood or plasma capable of reducing the coagulation-time of hæmophilic blood.

Prof. S. P. BEDSON, F.R.S. (London), said that the function of the spleen was to destroy effete platelets. He suggested that studies of spleen histology in teased fresh preparations would be of more value than of stained fixed tissues.

Mr. E. R. FLINT (Leeds) described varying results he had obtained following splenectomy in six cases.

The PRESIDENT said he had had no success with Dr. Timperley's egg albumin in cases of hæmophilia.

Prof. WITTS, in replying to the discussion, emphasised the fact that it is often possible to remove teeth in patients with hæmophilia without the use of styptics, and did not think that the possibility of such removal alone could be taken as evidence of the efficacy of a remedy.

Dr. TIMPERLEY was also asked to reply to the criticisms of treatment that had been made but said that he thought it was inadvisable to say anything further at present.

SECTION OF SURGERY

Prof. P. T. CRYMBLE presided at a meeting of this section when a discussion took place on the treatment of

Non-Stenosing Peptic Ulcer

Prof. JOHN MORLEY (Manchester) said that whereas the treatment of stenosis associated with ulceration left no legitimate grounds for controversy—being a mechanical obstruction it demanded surgical relief—the treatment of non-stenosing ulcers was still debated. On the whole surgical opinion now inclined towards conservatism, and there had been a movement to control the wholesale and indiscriminate operating on peptic ulcers which was once the prevailing fashion. The present vogue was towards medical treatment; their concern, however, should be not to consider a vogue of the moment, but to inform medical opinion on the more debatable points and to lay down the precise indications for surgical treatment. The present swing towards medical treatment was determined by an improvement in methods, notably in the recognition of the primary importance of diet over drugs. Control of treatment by gastric analysis and by repeated radiological examinations was very valuable. He deplored the widespread indiscriminate use of alkalis by patients, and the toxic effects that were apt to follow. He believed that histidine had a psychotherapeutic effect and nothing else.

The indications for surgical intervention were failure of prolonged and thorough medical treatment; impracticability of carrying out such treatment; and the occurrence of severe hæmorrhage. Acute perforation was an indication that, being undisputed, did not come within the present discussion. He believed the risks of immediate operation in hæmorrhage to be too great; transfusion should be used to get the patient into a good general condition and to tide over the grave emergency.

Duodenal ulceration.—The choice of operation was important. Hæmorrhage demanded the excision of the ulcer and with it the vessel that had been bleeding. Recurrence of hæmorrhage might follow gastro-enterostomy, and it was therefore ineffective as a form of treatment for hæmorrhage. Combined with excision of the ulcer, it was so difficult as to be dangerous. Some form of gastrectomy that included the first part of the duodenum was best. It was unwise to touch the ulcer if it was penetrating and adherent; in such cases he advocated a high Polya gastrectomy, with division of the pylorus and isolation of the ulcer in a blind pouch of duodenum. In the absence of hæmorrhage the choice in non-stenosing duodenal ulcers

lay between gastro-enterostomy and gastrectomy. He advocated high gastrectomy, preferably of the Polya type, in those cases of duodenal ulcer with high hydrochloric acid curve, commonly seen in young men. Gastro-enterostomy he reserved for duodenal ulcer in young women in whom the acid curve was low, and for elderly patients. He was influenced mainly by the figures for the incidence of gastrojejunal ulceration following gastro-enterostomy which, in his opinion, was in the region of 10 per cent. In the absence of marked hyperchlorhydria the risk of this severe complication was very much less, and the relative mortality of the two operations had to be considered. Performed for duodenal ulcer, he thought gastrectomy carried a mortality of 6 per cent., whereas gastro-enterostomy had a mortality of under 2 per cent. The difference should preclude the adoption of gastrectomy for every case of duodenal ulcer.

In dealing with *gastric ulcer* surgeons were influenced by the nightmare of the dread of carcinoma. The dangers of the supervention of cancer on chronic gastric ulcer had been very greatly exaggerated mainly by those whose observations were purely histological. He himself believed that malignant transformation of a simple ulcer was a very rare event. 66 per cent. of cancers of the stomach occurred in the pyloric canal, with 13 per cent. on the lesser curvature. Simple ulceration, on the other hand, was found on the lesser curve in 82 per cent., and in the pyloric part of the stomach in 13 per cent. From this it could be deduced that it was not possible for any large proportion of gastric carcinomata to have started as simple ulcers. The average duration of symptoms in chronic ulcer was 10·3 *years*; in cancer it was 12·7 *months*. A more important point was the difficulty in some cases of arriving at an accurate decision as to whether the ulcer was malignant from the start. There was a type of slowly developing cancer which closely simulated ulcer in periodicity of symptoms, in retention of appetite, in radiological findings, and in apparent response to alkalis. His rule was that *all* prepyloric ulcers were to be regarded with suspicion. If after three weeks' careful medical treatment there was still occult blood in the stools, he performed gastrectomy. Whenever a patient of cancer age presented a considerable ulcer crater with a short history of gastric pain a suspicion of malignancy should arise. It might be necessary to neglect the radiological appearance. An ulcer crater might disappear from the X ray picture, not because it was healing, but because it was filling with cancer cells. Apart from the urge that the fear of cancer gave towards operation, one knew that the results of gastrectomy for simple gastric ulcer were rather better than for duodenal ulcer. This was accounted for by the lower gastric acidity. Medical treatment was apt to be followed by relapse after relapse, especially in the larger ulcers.

The operation he advocated was some form of *partial gastrectomy*. His own preference was decidedly in favour of the modification of the Billroth I operation designed by Schoemaker. It was simple to perform, and being less destructive of the gastric function than the Polya operation, it was less liable to be followed by a severe degree of achlorhydric anæmia. He had performed the Schoemaker operation 172 times with five deaths, a mortality of 2·9 per cent. For gastro-jejunal ulcer that resisted all medical treatment it was necessary to undo the gastro-enterostomy and then to proceed to perform a high Polya gastrectomy. This alone would stop the vicious circle.

Mr. N. C. LAKE (London) said that the difference of opinion as to the success of medical and other forms of treatment arose in part at least from a difference in interpretation of the term "cure." While the physician might be satisfied with relief from symptoms in a patient living at a lower standard of life and with indefinitely prolonged restrictions, the surgeon was inclined to a more radical view and regarded his patient as "cured" when he was restored to normal life. He thought that surgical treatment of peptic ulcer more often produced the complete "cure." Surgical treatment held the field only temporarily. Once the ætiology of ulcer came to light medical treatment, or, more likely, prophylaxis, would come into its own. The aim of treatment now should be to reduce the level of gastric acidity. Gastro-enterostomy did not do this efficiently, and he therefore considered that, except in cases presenting insuperable operative difficulties, a gastrectomy of one-half to two-thirds of the stomach should be done. In duodenal ulcer with a low acidity, he did a gastro-enterostomy. In a series of 269 gastrectomies for ulcer he was able to show a number of 10–15 year cures; in only 4 per cent. were the results unsatisfactory. He had under 2 per cent. of anastomotic ulcers and no case of pernicious anæmia had occurred. The fractional test-meal done after operation showed little if any free acid. The strong argument against the operation of gastrectomy was the mortality, which he put as high as 9·5 per cent. He here included all causes of post-operative death, including those from intercurrent diseases. He did believe that ulcers could heal without surgical intervention, as witness the healed ulcers in the post-mortem room, but he thought that the natural history of ulcers was a sinuous curve, and although his cases had a prolonged course of preoperative medical treatment, they very frequently relapsed, and eventually came to operation. He thought there might be an emotional factor in the relapses.

Dr. CARL SEMB (Oslo) agreed that there was a natural tendency for ulcers to heal. The undoubted indications for surgery were perforation, massive hæmorrhage, and cicatricial stenosis; but surgery was also required when the healing process was for some reason interrupted. Medical treatment should commence with 4–6 weeks rest in bed, and the cases with a short history would give good results. If medical treatment had failed, after two to three trials, to give a permanent result, then surgery was to be advised. In Germany gastro-enterostomy had been abandoned; in America it was still done. He suggested that in Germany the associated gastritis might be more severe than in America. In any case, the practice in Norway was somewhere between that of the other two countries. Gastrectomy was the commoner operation and gave rather better results with a rather lower mortality. Anastomotic ulcer was fairly rare in Norway, occurring in 3–5 per cent. of cases. On the other hand, Dr. Semb reported that post-operative anæmia was distinctly common. After partial gastrectomy performed in 144 cases severe anæmia supervened in 36 per cent. of men and in 70 per cent. of women. It was especially common in young women below the age of 40 years of age. He liked the Schoemaker operation but he practised a modification in which the anterior wall of the duodenum was split to make the duodenal opening approximate more accurately to the gastric opening.

Colonel A. B. MITCHELL (Belfast) said that in severe bleeding he had often found one particular branch of the gastroduodenal artery inculpated, and had been

in the habit of ligaturing it with the aid of an aneurysm needle. He believed in the efficacy of calcium therapy in reducing the œdema which was a marked feature of ulcers and which was in part responsible for the slowness of their healing.

The President drew attention to some of the anatomical features not always appreciated in the performance of gastrectomy: the lesser sac did not extend to the right of the middle line; there might be no communication behind the stomach between the upper and lower parts of the lesser sac; contrary to text-book illustrations, the lesser omentum was completely avascular; the left gastric artery did not need preliminary ligature before the stomach was cut.

Mr. G. GORDON-TAYLOR (London) said that his figures for post-gastrectomy anæmia agreed with those of Dr. Carl Semb. A severe crippling anæmia in young women was a common feature of the results recorded at the Middlesex Hospital. He was strongly in favour of early operation—within 24–48 hours—in those cases of hæmatemesis which required surgical intervention.

Mr. H. W. RODGERS (London) said that the Scandinavian diathesis was one that tended to be associated with a less highly developed gastric mucosa. The mucosa was also not so well developed in women as in men. He advanced these facts in explanation of the difference in the figures for post-operative anæmia in different countries and in the two sexes.

The Gastroscope in Dyspepsia

Mr. H. W. RODGERS read a paper on the Use of the Gastroscope in Cases of Dyspepsia with Normal X Ray Findings. Gastroscopy, he said, was useful in diagnosis, both of diffuse conditions, such as gastritis, and of localised conditions, such as an ulcer in which the radiography was inconclusive as regards the existence of the lesion or its possible malignancy. The proof that a mucosa was normal might save a patient from treatment which was not only useless, but might be harmful. It was claimed that very early evidence of malignancy could be obtained by a change in colour of the ulcerated patch of mucosa and by the appearance of its edge. The value of examining the stoma of gastro-enterostomy cases was particularly apparent. Gastritis or ulceration could be demonstrated, though a jejunal ulcer tended to get tucked round under the edges of the stoma and out of view of the gastroscope. The diagnosis of atrophy of the gastric mucosa was only possible with the use of the gastroscope.

Mr. H. C. EDWARDS (London) said that his initial enthusiasm had been a little tempered, but he did still regard the gastroscope as an invaluable instrument, particularly for observation of the healing process in ulcers. His opinion was that ulcers did not heal in patients over the age of 45–50. With this opinion Mr. Rodgers disagreed.

SECTIONS OF NUTRITION AND OF OBSTETRICS AND GYNÆCOLOGY

AT a joint meeting of these sections a discussion took place on the

Nutritional Needs of Pregnancy

Sir ROBERT MCCARRISON (Oxford) said that we should not regard the nutritional needs of pregnancy as being fundamentally different from the nutritional needs of women at other periods of their lives. The perfectly nourished woman should take pregnancy in her stride, and the medical profession must devote its energies to the mass-production of women who can do so. He emphasised the factors which, in his opinion, are necessary for perfect nutrition. There must of course be an adequate supply of the necessary food materials, but in addition there must be measures and habits of life favourable to nutritional efficiency, such as appropriate exercise in the open air, suitable clothing, proper breathing, and satisfactory action of the kidneys and bowels. Lastly, there must be an avoidance of adverse influences such as insufficient rest, bad ventilation, worry and emotional excitement, infections, and indulgence in alcohol. A perfect dietary was provided by milk and milk products, lightly milled cereals, green leaf and root vegetables, fruits, pulses, eggs, and meat (including fish, fowl, and glandular organs). In this country small doses of cod-liver oil and of yeast extracts were wise precautions. He criticised certain of the recommendations of the League of Nations Technical Commission: in his view an allowance of 68 g. of animal protein a day is unnecessarily high, and more emphasis should have been laid upon the use of wholemeal bread, fresh green vegetables, and raw ripe fruit.

Dame LOUISE MCILROY (London) expressed the opinion that diseases of pregnancy and even the complications of childbirth often owe their origin to dietetic defects that should be classified as deficiency diseases. It was strange that only during the last few years had the results of nutritional research, carried out in man and animals, been applied to obstetrical practice. Many hospital patients who complained of dyspeptic disturbances, muscular cramps, sleeplessness, backache, and other symptoms during pregnancy could be treated with good results, not by sedatives, but by the administration of minerals such as calcium and iron, and by careful advice on diet. Patients should be weighed regularly in antenatal clinics, since a large gain in weight often indicated incipient toxæmia. She also emphasised that pregnant women need fresh air and exercise, and recommended a 2-mile walk every day. There were practical difficulties in supplying pregnant women of the poorer classes with an adequate diet, and efforts should be made to improve their conditions of life. Transport, home storage, agricultural practice, and finally purchasing power were among the national problems to be tackled, but it must not be forgotten that the proper nutrition of the pregnant woman was also a national problem.

Dr. G. C. M. M'GONIGLE's paper was read in his absence by Dr. G. A. Harrison. Dr. M'Gonigle emphasised once more the importance of nutrition in pregnancy and lactation. There was no evidence that a reduced intake of food ensures a smaller baby and an easier delivery, nor was it certain that it reduces the incidence of pregnancy toxæmias. He agreed with Sir Robert McCarrison that pregnancy should not call for any great change in the diet of a previously well-nourished woman. In speaking of the dietary requirements of pregnancy, Dr. M'Gonigle said that deficiencies in calorie intake could be neglected, but that among the poorer classes the protein intake was often dangerously low. He laid stress on the importance of generous supplies of calcium and iron; in his view it is almost impossible to administer an excess of these dietary constituents. He spoke also of the advisability of giving supplements of vitamins A, B, D, and E, and referred to his experiments in Stockton-on-Tees, and those of Lady (Rhys) Williams in other areas, to support his statements. He considered an adequate supply of protein to be the greatest single requirement during

lactation. A nursing woman should be given 24 g. of good quality protein for every pint of milk produced, and this should be additional to the protein taken for the woman's own bodily requirements. While the supply of vitamins and minerals to pregnant women in tabloid form might be pharmacologically a correct procedure, such a measure should not be necessary. Suitably selected and prepared food should suffice for their needs.

Dr. LUCY WILLS (London) dealt with calcium and phosphorus requirements during pregnancy. She quoted the work of Toverud and Toverud who showed from balance experiments that 1·6 g. of calcium and of phosphorus per day are necessary to maintain the body in equilibrium during pregnancy, and in addition to this the supply of vitamin D or sunlight must of course be adequate. In India and China, osteomalacia was a very common complication of pregnancy and lactation. In North India the disease was apparently caused by a deficiency of calcium, while in Bombay a deficiency of phosphorus was more common. Even in this country the calcium intake rarely reaches 1·6 g. a day. Hence, many women must be in negative calcium balance during pregnancy. Dr. Wills suggested that possibly much of the ill health among expectant mothers was attributable to a mild form of osteomalacia. Cramps, for example, could often be cured by the administration of calcium.

Dr. MARGARET BALFOUR (London) spoke on various practical means which had been adopted for securing better nutrition in pregnancy. One was the distribution of milk, which had the disadvantage that there was no certainty that the mother herself takes the milk; it might be given to other members of the family. Some authorities had given free meals to pregnant women; this was a difficult service to organise and was not popular with the mothers who disliked leaving their families during the dinner hour. The third method consisted in giving supplementary foodstuffs. Dr. Balfour described a large-scale experiment on these lines which had been carried out during the past two years in the distressed areas under the auspices of the National Birthday Trust. The maternal death-rate had been greatly reduced among women receiving the supplements; this result must not be accepted as final but as indicating the need for further research. During the present year the scheme had been extended to include more than 10,000 women, and it was hoped not only to confirm the previous findings but also to determine which of the various foodstuffs administered was chiefly concerned.

Mr. D. W. CURRIE (Leeds) briefly reviewed the early work on the effect of vitamin E on the reproduction of animals, and gave a short account of his own clinical trials of this substance. The vitamin was administered in wheat-germ oil to 37 women who had previously had 121 pregnancies with only 15 living children. Following this prophylactic treatment, 36 living children were born to these 37 women (3 women aborted and there were two sets of twins). Some of the patients treated with vitamin E developed albuminuria in the course of their pregnancy.

Dr. R. A. MCCANCE (London) described the results of an investigation into the amounts of food actually consumed by pregnant women at different economic levels. The study had been carried out by the individual method. All food eaten during the period of one week was weighed, and the chemical composition of the diets calculated from analyses carried out in Dr. McCance's laboratory. Twenty-three wives of unemployed miners, 20 labourer's wives, 21 women of the artisan class, and 7 of the professional class had been studied. The average intakes of proximate principles, calories, calcium, phosphorus, and iron rose with increasing income, but even among the artisan class, whose incomes were sufficient to buy an adequate diet, the intakes of the various constituents were in no case up to the allowances suggested by the League of Nations. The average calcium intake was less than half, and the calcium intake of the wives of unemployed only about one-quarter of the requirement (1·6 g. a day) discussed by Dr. Lucy Wills.

Sir FRANCIS FREMANTLE (Hatfield) agreed with Sir Robert McCarrison that rest and sleep are important factors in well-being during pregnancy. Rest would tend to promote assimilation of the food ingested. Sir Francis suggested that mothers who are working and walking all day in their homes need more rest, not a 2-mile walk.

Dr. ERNEST MILLIGAN (Glossop) dealt with the subject from the economic standpoint. He had collected budgets from 52 families in his district where the average amount available for food per head per week was 4*s*. 6*d*. A process of simple arithmetic showed that if the mother is to buy for herself 1 quart of milk a day in order to provide herself with 1·6 g. of calcium, there will not be much money left over for other commodities. The speaker urged the desirability of supplying cheap milk to mothers and children under 5.

Sir MANGALDAS MEHTA (Bombay) followed with some remarks on the nutrition of expectant mothers in Bombay, where, he said, rickets and osteomalacia are not very common, except among purdah women, but anæmia is a very important factor in maternal mortality. An inquiry was being made at the present time into the diets of poor working-class women, whose food consists almost entirely of polished rice eaten with a gravy of spices, condiments, and salt.

Mr. L. C. RIVETT (London) pointed out that although a perfectly nourished woman should take pregnancy in her stride, in actual practice a large number of our expectant mothers have incomes so low that they cannot possibly do so. Imbalance among the dietary constituents might be important, as well as actual deficiencies.

Colonel C. H. REINHOLD, I.M.S., spoke of the incidence of rickets in the Punjab and other parts of India.

Prof. A. LEYLAND ROBINSON (Liverpool) suggested that among the poorer classes multiparæ tend to be underfed more often than primiparæ. The nutritional needs of pregnancy provided a very different problem from that of the nutritional needs of non-pregnant women. The introduction of the fœtus into the uterus made a profound difference to the mother.

Sir ROBERT MCCARRISON, in reply, said he was quite aware that in practice pounds, shillings, and pence are all-important, but it was the business of research workers to preach the ideal and nothing less. At present doctors were the salvagers of wrecks. The future must lie in prevention, not cure, and our aim must be adequate nutrition from the beginning of antenatal life.

Dame LOUISE MCILROY said that she had proved the benefit of exercise in the open air for expectant mothers. Housework could not take its place. In contrast to Prof. Robinson, Dame Louise said she believed that, among all but the very poor, women tend to over-eat during pregnancy.

THE ROYAL SANITARY INSTITUTE

THE annual congress of this institute was held in Birmingham from July 12th to 17th, when Mr. OSMOND CATTLIN, the chairman, installed the Earl of DUDLEY as president for the current year. In a brief address Lord Dudley spoke of the prevailing enthusiasm for planning in all directions—which was all to the good, he said, if we were certain of the validity of what we were planning.

Sir KINGSLEY WOOD, the Minister of Health, addressed the congress at a special meeting. Instead of forecasting future legislation he confined himself—somewhat to the relief of the delegates—to Acts already placed on the Statute Book or shortly to find their way there. The health of the people, he said, is better to-day than it has ever been, but it is costly, for last year loans to local authorities for sewage-disposal alone were greater than all the loans for all public health services granted in 1875. The new legislation concerning housing, factories, and maternity services promises immense benefits, but calls for great labour and care from the local authorities and their officers.

In the section of preventive medicine Sir ARTHUR MCNALTY, chief medical officer of the Ministry, gave an address entitled a Coronation Pageant of the Public Health, reviewing public health legislation in the hundred years between the coronations of Victoria and George VI. He spoke of the difficulty of getting the people to accept health rules and laws for their own benefit, why Chadwick failed to obtain all he sought because the people would rather have cholera than be bullied by health regulations, and how modern hygiene is obstructed by young people neglecting rest in a feverish hunt for ill-ventilated amusements at night. He drew attention to the leading part Britain has taken in the development of hygiene and said that at the beginning of the century we stood far in advance of any other country. Since then others have caught us up and increased effort is required on our part to keep in the van.

MATERNITY IN HOME OR HOSPITAL

A discussion on the development of the maternity service was opened by Prof. J. M. Munro Kerr, Dr. G. F. Buchan, medical officer of health for Willesden, and Dr. C. E. S. Flemming. They agreed that institutional midwifery would increase at the expense of deliveries in the women's own homes and also, though for different reasons, that this should be encouraged.

Prof. MUNRO KERR urged greater employment of obstetric specialists and advocated a scheme in which all deliveries should take place in institutions staffed by competent midwives and obstetricians. He suggested that the Ministry of Health should establish a central obstetric board to control the maternity service. This called forth some criticism in the discussion, for he had not explained how his proposed central board would stand with the Central Midwives Board. Dr. BUCHAN agreed generally with Prof. Munro Kerr. He maintained that the risk of infection was no greater in an institution than it was at home, and expressed the belief that home deliveries would soon become exceptional. Dr. FLEMMING differed from the two former speakers in urging that general practitioners—or such of them as wished to practise midwifery—should staff the maternity homes with the assistance of trustworthy midwives and obstetric specialists. He pointed out that many situations arise in pregnancy, delivery, and puerperium that were entirely within the province of the family doctor.

INCAPACITATING SICKNESS.—INDUSTRIAL MEDICINE

The conference of medical officers of health opened with an address by Dr. ERNEST WARD, who introduced the subject of incapacitating sickness. Dr. P. L. MCKINLAY, of the Department of Health for Scotland, summarised the findings of the Scottish Insurance Commission which publishes annually the only returns available in Great Britain on the incidence and duration of sickness amongst the insured population. He referred to the gap between knowledge and practice, and mentioned that in only 500 out of 11,000 cases of incapacitating sickness was a specialist's opinion obtained and in only 500 was help sought from laboratories. An increase was evident in certain diseases, especially bronchitis, gastric disorders and, most notably, psychological disturbances. There was, he said, a rise in incapacitating sickness in young insured persons.

Prof. R. M. F. PICKEN, of the Welsh National School of Medicine, expressed the hope that the English Insurance Commission would issue annual reports similar to those available from Scotland. He drew attention to the meagre sources of information on morbidity in the population, which except for a few diseases, such as rheumatism, was almost negligible. Though much was known about the incidence and interference of the minor diseases of school-children and infants, of tuberculosis and comparable special forms of sickness, it was only possible to guess at the nature and duration of the more common causes of ill health which incapacitate the workers, and at the waste due to them. Knowledge of incapacity was lacking, for though it was well known that what incapacitates a person for one kind of work does not incapacitate him for another, and that reaction to sickness varies enormously in different individuals, no statistical information on these points was available to help in forming a policy of the management of sickness in the population.

Dr. E. R. C. WALKER, speaking as an insurance practitioner, admitted the lack of satisfactory evidence and the necessity for obtaining it; but he pointed out that in the present state of insurance practice it was hardly feasible to obtain more from the practitioners than they give already.

Dr. HOWARD COLLIER, reader in industrial hygiene in the University of Birmingham, addressing the section of hygiene in industry, spoke of the increasing interest of medicine in industry and the building of a bridge between the science of physiology and the conduct of manufacture. He referred to the needs of workers as individuals, as members of a community, and as units in an industry, and of the new conception of medicine to create health by satisfaction of these needs. He also mentioned the difficulty of industrial medicine caused by the lag in time between an evil produced by a new process and the appearance of disease in those exposed to it.

Mr. WALTER BARROW read a paper on the utilisation of medical service in industrial business, using Cadbury's works at Bournville as an example of what can be done to protect workers in large industries where the standard required is high.

Dr. G. P. CROWDEN, reader in industrial physiology at the London School of Hygiene, read a paper on the practical application of physiology to hygiene in industry. In his introductory remarks he outlined a scheme for the health control of the whole population which would abolish the present confusion between the health activities of the Ministry of

Health and those of the Home Office and the Board, of Trade.

In the discussion emphasis was laid on the importance of reform coming from employers and employees alike.

HEALTH INSURANCE AND PUBLIC SERVICES

In the section of national health insurance Mr. HENRY LESSER, chairman of the Consultative Council for Approved Societies Work, took a rosy view of the influence of State insurance. Mr. E. M. STAFFORD, chairman of the Birmingham insurance committee, traced the history of insurance from 1911, when in spite of "ninepence for fourpence" the Act met with opposition from all parties, to the present day, when insurance is not only accepted but expected to embrace every risk to which we are exposed. He had no new objections to urge, but the main theme of his argument was embodied in the following sentence: "Perhaps the greatest disadvantage—it may almost be described as an evil—of the extensions of social insurance, is the removal from the mind of the ordinary man in the street, the urge to save." Yet he admitted that the manifold advantages of insurance far exceed any evil it has produced, one of the chief being improved medical service. Mr. F. T. WEST read a paper which was a plea for "a healthway code" to make people health-conscious. He suggested a short book to be sent to every householder; "each chapter should be written by an expert on the subject, and preferably one who has had journalistic experience and is able to put it over."

In the conference of sanitary inspectors, Mr. A. W. TURLEY, chief sanitary inspector of Birmingham, spoke on the disinfestation of furniture, in which he gave a detailed description of the use of HCN to ensure death to the bugs and their eggs and safety to man. He mentioned the use of test papers to decide whether the gas exists in dangerous concentration. At the same meeting, Mr. J. H. CODLING, general manager of the salvage department, Birmingham, read a paper on the composition of house refuse and the utilisation of its components. Birmingham recovers about £20,000 a year from the sale of salvage from house refuse, which pays for the labour of salvage and gives something over to reduce the rate needed for collection and disposal of house refuse; but he said that in this country at the present time refuse can never pay for itself.

The conference of representatives of local authorities had the opportunity of hearing Dr. R. R. KUCZYNSKI speak on the future of the population of Great Britain. In the section on maternity and child welfare, Miss LILLIAN DE LISSA pleaded for an extension of nursery schools. Dr. ETHEL CASSIE of Birmingham gave a qualified support in commending the day nursery as a necessary and useful institution, and Dr. HUGH PAUL put forward the case for periodic medical inspection of toddlers.

REVIEWS AND NOTICES OF BOOKS

A Textbook of Obstetrics

By EDWARD A. SCHUMANN, A.B., M.D., F.A.C.S., Professor of Obstetrics, School of Medicine, University of Pennsylvania; Surgeon in Chief, Kensington Hospital for Women, Philadelphia, and Gynæcologist and Obstetrician to Philadelphia General and Memorial Hospital. London: W. B. Saunders Company. Pp. 780. 27*s.* 6*d.*

IN a book of no great length Prof. Schumann has managed to teach and describe his subject in sufficient detail and at the same time to discuss those aspects which cannot be treated dogmatically. The first hundred pages provide one of the best descriptions of the anatomy and physiology of the female reproductive organs and of the state of pregnancy that we have read, and the illustrations do credit to the text. Antenatal supervision receives proper attention, and advice is given on several items of practical importance which are too often ignored. The physiology and mechanism of labour is well described, and the instructions for its conduct are practical and detailed. The routine use of pentobarbital sodium as a drug to relieve pain in labour cannot, however, be approved without reservations. The substance has been given a good trial in this country, and quite apart from the restlessness it often induces its administration does not appear to be free from danger.

In the treatment of important complications of pregnancy, such as eclampsia and placenta prævia, no definite line of teaching is followed. Prof. Schumann describes several alternative methods of dealing with the situation, and leaves his reader uncertain which he would advise under different circumstances. The chapter on contracted pelvis contains a description of a number of possible deformities and contractions. It is surprising to find some twelve pages devoted to external pelvic measurement, while little more than one page is allotted to such a difficult and debatable subject as the management of patients with minor degrees of pelvic contraction. These are among the few criticisms that could justly be made of a volume that is readable, instructive, and beautifully illustrated.

Études sur le spina bifida

By JACQUES LEVEUF, Professeur agrégé à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1937. Pp. 330. Fr.75.

CONSIDERING that spina bifida is by no means rare among congenital abnormalities, there has been but little authoritative work published on it during recent years. Text-books, particularly in this country, have adopted the classification propounded by Recklinghausen in the last century, but few of them supply clear information on such important points as the relation of spina bifida to hydrocephalus and the exact constitution of the sac. In this monograph Prof. Leveuf and his collaborators have set out the results of a most painstaking examination of 80 cases, with a detailed histological examination of operation and post-mortem specimens. Their account gains both in interest and in conviction from the wealth of diagrams and photomicrographs with which it is illustrated.

Prof. Leveuf has long held the opinion that the literature on spina bifida contains much that is artificial, and that the classification requires revision; as a result of his researches he believes that the latter is a much simpler task than has been supposed. He suggests that all spina bifidas fall into one of the following types: 1. *ulcerated;* in which the area medullosa is either (*a*) exposed, or (*b*) covered by fibrous tissue; (2) "formes épidermisées"; (3) meningocele; (4) spina bifida with tumour (lipoma). The development, clinical features, prognosis, and treatment of these types are described with great lucidity. On one important point the author is

prepared to speak emphatically; spina bifida, so often loosely described as a protrusion of "the meninges" through the spinal canal, is really a protrusion of the leptomeninges through the dura. The latter terminates at or near the base of the sac, and enters but little into its formation.

Of particular interest is the chapter on hydrocephalus. In Prof. Leveuf's opinion it only occurs in the first two of the types referred to; it is of most importance in the second type because it is in these cases that operation is particularly indicated, owing to the danger of rupture of the sac. It is well known that many of these infants subsequently develop hydrocephalus, and it has been thought that operation precipitates it. Prof. Leveuf is emphatic that this is not so; operation to some extent increases the number of hydrocephalics by prolonging the life of some infants who would otherwise have died before its development, but it neither causes nor aggravates it. When signs of it are present operation is useless, but when they are absent operation should not be withheld on account of its possible occurrence. Prof. Leveuf does not accept the category of "spina bifida occulta." He believes that in the main it includes cases which will not stand the test of detailed examination, and that the term is destined to pass into disuse.

Other aspects of spina bifida, such as embryology and surgery, are fully dealt with in this attractive volume, which should win for itself a permanent place in the neurologist's library.

Common Skin Diseases

Fourth edition. By A. C. ROXBURGH, M.A., M.D., F.R.C.P., Physician in Charge of the Skin Dept. and Lecturer on Skin Diseases, St. Bartholomew's Hospital. London: H. K. Lewis and Co. 1937. Pp. 401. 15*s*.

A MANUAL which has undergone three revisions in a space of five years is in an enviable position. Minor errors and defects are corrected, illustrations added or withdrawn as required, and the text both as regards ætiology and methods of treatment is kept up to date. Dr. Roxburgh's preface to this fourth edition shows how effectively he has made use of his opportunities. Four of the coloured plates have been replaced by better ones, and 26 have been added to the large monochrome series, while valuable additions have been made to the paragraphs on gold and arsenical dermatitis, and the injection treatment of varicose veins, with a list of contra-indications well worth study.

One of the best chapters in the book is that on dermatitis due to chemical causes; it includes some striking illustrations, notably one on p. 80, demonstrating a positive patch-test with a small chrysanthemum leaf, which should convince the most sceptical of the value of this test. The statement that the clinical features of plant dermatitis are to be found on the hands and face will be accepted by all observers, but few will agree that the genitals are commonly involved (p. 79), or that "all nickel-platers eventually develop a dermatitis due to nickel salts." The assertion, too, that some patients "by graduated exposures become able to resist an irritant and can resume the work which caused the dermatitis" seems to need qualification, for in the experience of most dermatologists the immunity is usually of short duration, while every relapse due to repeated exposure renders the dermatitis more intractable, and the patient less employable. A short paragraph on the responsibility resting on the practitioner to take specially careful notes wherever a claim for compensation might be contemplated would add considerably to the value of this section. Another addition which some practitioners might welcome is a tabulated list of the drugs and courses generally recommended in the treatment of syphilis, at least in so far as it affects the skin and mucous membranes. The omission of such a section lends colour to the view that only the venereologist is qualified to undertake the management and cure of this important and still widespread infection. These few criticisms are meant to be constructive. We know of no better introduction in the English language to dermatology than this book, or one more likely to stimulate the student's interest at a price within his means.

Historical Notes on Psychiatry

Early Times to End of Sixteenth Century. By J. R. WHITWELL, M.B., late Medical Superintendent, St. Audry's Hospital, Melton, Suffolk. London: H. K. Lewis and Co. 10*s*. 6*d*.

Dr. Whitwell's book is a useful addition to the meagre literature in English on the history of psychiatry. The opening three chapters deal with the ancient writings of Asia and Egypt, the Scriptures (including the Bible, Talmud, and Koran), and some classical examples of insanity—e.g., Orestes, Agave, Hercules, Ajax. The author has an agreeable way of discussing with apparent seriousness the differential diagnosis in these somewhat dubious cases; he complains, for example, that the great writers, from Homer to Euripides, who described the madness of Orestes, were insufficiently interested "in an accurate presentation of the facts. Their accounts therefore show considerable divergence which makes a definite diagnosis extremely difficult," and he quotes Horace much as one might quote Kraepelin. A brief review of the opinions expressed by Plato and Aristotle, and a longer account of those of the Greek and Roman physicians, from Hippocrates to Paulus Aegineta, leads to an easy-going survey of medieval psychiatry; there is also an interesting excursus about the three disorders—epilepsy, incubus, and accedia.

Although Dr. Whitwell is occasionally uncritical and discursive, his book is entertaining and erudite; in the footnotes especially one finds many out-of-the-way pieces of learning. The last ninety pages of the work are given up to happily chosen translations and extracts from representative authors of the period under consideration.

Maladies infectieuses

Second series. By A. LEMIERRE, Professor of the Faculty of Medicine, Paris. Paris: Masson et Cie. 1937. Pp. 310. Fr.55.

THIS second volume published by Prof. Lemierre contains a series of clinical lectures as interesting as those which graced the first one. Readers of this journal will be interested to read his further notes on investigations of *Bacillus funduliformis;* other infections rare in Europe reported with admirable lucidity include spirochætosis and kala-azar. Pitfalls in the path of the specialist in infectious diseases are recorded in the lectures dealing with the resemblance of certain cases of Hodgkin's disease to undulant fever and the evolution of acute leukæmia with the appearances of necrotic pharyngitis. The work of the Claude-Bernard Hospital is something so different from any to be found in London that this book should make a strong appeal to all physicians who want to broaden their knowledge.

THE LANCET

LONDON: SATURDAY, JULY 31, 1937

THE NEW FREEDOM

SINCE the insurance medical service was started in 1911 the practitioner's range of activities has been ever more closely limited—there is hardly any object in creation which has been defined with more precision—but he still lacks the help of any properly organised consultant, diagnostic, or hospital services. Where they exist, they are casual and sporadic. Once having accepted the King's shilling (or rather 9*s*.) the medical recruit accepts conditions as he finds them, and has little power to go beyond their bounds. Even the Voluntary Hospitals Commission can find no place for him in the existing hospital framework. But in one sphere of public life the inevitability of gradualness received a knock from Mr. A. P. HERBERT last week, and we on our part need not despair of the release of the panel practitioner from his shackles within our time.

Two significant things happened at the Belfast meeting of the British Medical Association. The Representative Body prolonged its session to await the arrival of a telegram from the Ministry of Health, announcing the decision to start a far-reaching scheme of post-graduate study for insurance practitioners. Not as heretofore is participation confined to the rural practitioner, and him only under some kind of means test, but every doctor who helps to run the national health insurance scheme is to be given the opportunity every five years of a fortnight's study unoppressed by financial loss. The fee for the course, his travelling and maintenance, and the expense of a locum tenent will all be borne from a State grant. Such courses have already been held at the British Post-graduate Medical School and three will be available there in the coming autumn; if when the scheme gets going the number of students should prove too great to be accommodated at Hammersmith, the responsible authorities will doubtless look elsewhere. It may be questioned however what can be done within a fortnight. Is it reasonable to hope that within such a period a thoughtful and scientific interest in medical progress could be reawakened? This has been the primary object of those concerned with post-graduate teaching at Hammersmith. Less ambitious would be a course restricted to telling the doctor what he ought to know and what he ought to do. But whichever was the aim the fortnight would be an arduous one both for the taught and for the teachers, and we are not alone in wondering whether the plan now proposed, although it may be a great advance on what has hitherto been available, is the best possible solution. For example, instead of bringing the doctor to the atmosphere we might send the atmosphere to the doctor. The solution would then be a post-graduate medical school giving detailed instruction to comparatively few men who would carry the torch into centres all over the country where groups of practitioners were attached to local hospitals.

The other significant thing was the result of an invitation to Mr. ERNEST BEVIN to take part in a discussion later in the week in the section of medical sociology over which Dr. THOMAS CARNWATH presided. Mr. BEVIN is chairman of the Trades Union General Council, which has recently been on speaking terms with the B.M.A. council with interesting results. Mr. BEVIN started from the quite proper assumption that the bulk of medical practice is and must be concerned with industrial work, and he was hoping that in the near future the B.M.A. and the Trades Union Congress would get together and ascertain the best way of reorganising a panel service in a position to apply scientific discovery, more rapidly and efficiently, to the needs of the people. The trade unions are, he said, as keen as anyone on the health of the community. Why should medicine not collaborate with them? Your individualism, he remarked, has been one of our greatest handicaps. His own remedy—more fundamental than fourteen days at a post-graduate school—was a variety of group practice in which 20 or 30 general practitioners would pool their panel patients, and each have the chance of specialising on some phase of industrial medical work. Let the State or the local authority, he said, provide the accommodation and equipment for a central practitioners' clinic which would keep close touch with the local hospitals and a research institute, ensuring early diagnosis and prompt application of the appropriate treatment. The records thus obtained would, he thought, be of great value to the medical service, and furthermore they would assist in conquering the fear of the workers, primarily on economic grounds, to medical examination. In this fear Mr. BEVIN finds another great hindrance to industrial medicine. The worker regards the works doctor as employed by the manager to protect his own interests. When a man, after some illness or injury, is examined to ascertain his fitness for some particular occupation, he does all he knows to get back to his job within the prescribed three weeks, and the fear of losing his livelihood overpowers every other consideration. We must recognise that in the depressed areas the rejections on medical grounds for a particular industry are already creating a new type of medical derelict. The works doctor as such must, Mr. BEVIN thinks, disappear from the order of things and be replaced by a joint body not representing one side only. How gladly would the workers welcome an overhaul of the whole industrial medical service; and here he was at one with Dr. L. P. LOCKHART who introduced the discussion; it was no use, said Dr. LOCKHART, working out the fitness of workers for particular tasks if we had no social mechanism for

effecting transfers or absorbing misfits where they would be assets. What was needed was an education in biological interpretation.

There are a tremendous number of small factories for the health of which, in the natural order of things, insurance practitioners should be chiefly responsible—factories employing between 100 and 250 persons, and accounting for more than 20 per cent. of the workpeople in the country. The passing of the Factories Bill, the openings for post-graduate study, and the possibilities of local organisation may yet release those in general practice from their growing sense of frustration.

FILARIAL PERIODICITY

THERE are two possible explanations of the presence of the embryos of *Filaria bancrofti* in the peripheral blood at night and of their virtual disappearance during the day. In the first place the embryos may shelter in some internal organ or in the great vessels during the day and migrate to the peripheral vessels at night. This is the view that PATRICK MANSON in 1882 regarded as the right one, and it remained unchallenged for some fifty years. The other possibility, which W. W. MYERS had put forward in 1881, is that the female adult worms produce embryos simultaneously and at a definite time in each 24 hours, and that these embryos are destroyed daily by the defence mechanisms of the host. MANSON was led to his decision by experiments on dogs infected with the *Dirofilaria immitis*, which shows a similar though less definite periodicity. He found that if such dogs were killed with prussic acid at 6 A.M., when embryos were scarce in the peripheral blood, they could be found in large numbers in the lungs. Apparent confirmation of this view was provided in 1897 by a man who, being known to be heavily infected with the *F. bancrofti*, and to show a typical nocturnal periodicity, died after taking a dose of prussic acid at 8.30 in the morning; for vast numbers of embryos were found in his lungs and in the large blood-vessels of the thorax. Recording this case in 1898, in the first edition of his "Tropical Diseases," MANSON assumed that in sudden death, such as occurs from prussic-acid poisoning, there would be no appreciable flow of blood or lymph after death, and that the embryos were therefore lurking during life in the positions in which they were found post mortem.

In the past few years CLAYTON LANE[1] has cast doubts upon the generally accepted view of MANSON, and has produced evidence that supports the theory of MYERS. He quotes[2] experiments on dogs undertaken at his suggestion by DRINKER and FIELD at Harvard which show that, after death from cyanide poisoning, lymph goes on flowing from the thoracic duct for some ½–1½ hours, and he holds that it was this post mortem flow of lymph that carried the microfilariæ from the post-thoracic lymphatics into the great blood-vessels where MANSON found them in the man who died after taking prussic acid. If LANE'S view is correct, all live female worms in the same tissue or body should be found to be at the same stage of embryonic development at the same hour, and O'CONNOR[3] of Columbia University, who made an extensive study of sections of excised lymphatic glands, testicles, and other organs infected with *F. bancrofti*, found that, provided they were alive when excised or when their host died, all female worms from the same source were in fact at the same stage of pregnancy, in whatever kind of lymph vessel they lay. He believed that the cycle of pregnancy is so timed—at least in relatively healthy persons—that the birth of microfilariæ shall take place about midday; but LOW and MANSON-BAHR[4] have not considered these observations conclusive, and so far no attempt has been made by other workers to confirm or refute them.

In his latest paper[2] CLAYTON LANE writes on the mechanism of the destruction of the microfilaria in the body. In an infected person, he says, embryos are prevented from reaching the blood stream by the lymph glands and, in the testis at least, by other reticulo-endothelial tissue, until the lymph glands have been put out of action by blockage and subsequent by-passing by the formation of new lymph channels; and in sections of these tissues embryos can be seen in process of destruction by cells of the reticulo-endothelial system. In LANE'S opinion it is the mobile cells of this reticulo-endothelial system that are responsible for the destruction of microfilariæ when they have reached the blood stream. That rapid destruction, or at least disappearance, of microfilariæ does at times take place has been amply demonstrated by MURGATROYD,[5] KNOTT,[6] RAO,[7] and others, who have found that when microfilariæ are injected in large numbers into the human blood stream none can subsequently be found in blood films in most cases even after the lapse of a few minutes; and when they have been so found in man or beast the findings are just those that might be expected were the reticulo-endothelial system blocked. Direct anatomical evidence of massive destruction of microfilariæ is at present scanty, but LANE quotes one case of O'CONNOR'S in which a man died at 1.15 A.M. of aortic disease and post-mortem examination showed normal embryos in the lungs, while in the spleen and liver they were present in more or less advanced stages of degeneration. This finding suggests that destruction was actually taking place in these organs, though it is possible that the degenerate embryos may have drifted to the liver in the splenic vein and have been filtered out there. The question could presumably be settled by systematic examination of the spleen, liver, and bone-marrow after death had taken place at different hours in persons in whom periodicity is known to have been maintained to the end. Information might also be obtained from sections

[1] Lane, C., *Lancet*, 1929, **1**, 1291.
[2] Lane, C., *Trans. R. Soc. trop. Med. Hyg.* June, 1937, p. 61.
[3] O'Connor, F. W., *Ibid*, 1932, **26**, 13.
[4] Low, G. C., Manson-Bahr, P. H., and Walters, A. H., *Lancet*, 1934, **2**, 531.
[5] Murgatroyd, F., *Ibid*, 1933, **1**, 610.
[6] Knott, J., *Trans. R. Soc. trop. Med. Hyg.* 1935, **29**, 59.
[7] Rao, S. S., *Rep. Calcutta Sch. Trop. Med.* for 1935, p. 143.

of liver taken during abdominal operations on infected persons. Such investigations would be well worth making, seeing that this conception of the reticulo-endothelial system as the destroyer of circulating microfilariæ alters the whole pathology of Bancroftian filariasis.

THE PREVENTION OF SILICOSIS

JOINT attack on a common problem by workers in different branches of science is a method now being applied with much success in the study of industrial diseases; silicosis research, for example, has attracted investigators in the physical as well as the biological sciences. In this country the Medical Research Council has sponsored studies of the mineralogical and chemical properties of mineral dusts, as well as of the pathological aspects of the problem. Numerous investigators, working alone or as members of a team, have made noteworthy contributions to the subject, and the suggestions put forward by workers in one field have often been of great service to those in another. We commented only recently on the work of Prof. BRISCOE and his colleagues [1] on the highly reactive nature of newly formed mineral dust. A prophecy that the faces of freshly fractured particles might prove to have special properties due to exposed and unsatisfied valencies was made in 1932 by Dr. HEFFERNAN [2] from a consideration of the work of Sir WILLIAM BRAGG on the lattice structure of crystals. Now comes an account of an experiment on the quartz-dusting of rabbits which appears to confirm the physical and chemical implications. DENNY, ROBSON, and IRWIN,[3] working in Toronto and at the McIntyre Mine, Schumacher, Ontario, have enlisted chemistry and experimental pathology to supplement and support a hypothesis originally made on the basis of purely physical theory. Nodular fibrosis has been produced in some rabbits' lungs in the course of a dusting experiment of six months' duration. This was accomplished by a daily exposure of the rodents to dust freshly formed by a special pulverising apparatus carried in the animal chambers. The uniformity and ease with which fibrosis seems to have been produced in these animals is noteworthy in view of the general failure to cause fibrosis in rabbits by dusting experiments except after prolonged exposure, sometimes as long as two years. The dust preparations hitherto used were made by grinding samples of the rock and preserving them in the powdered state. On the present hypothesis such samples would be considered "stale" and to have lost their activity.

DENNY, ROBSON, and IRWIN base their work on the "solubility theory" of silicosis, according to which "the chemical reaction and not the physical presence of siliceous material is responsible for the production of fibrosis in silicosis." If we could prevent the dust particles from dissolving we might abolish their fibrosis-producing capacity, and this result seems actually to have been achieved in the experiments described. A detailed study was made of several substances that might be supposed to influence the solubility of silica, and it was found that a small amount of finely divided metallic aluminium would almost completely suppress the dissolution of powdered quartz and silica sand in water. This finding led to a parallel dusting experiment in which rabbits were exposed to dust freshly formed from a mixture of lumps of quartz and aluminium pellets. In these animals the tissue reaction "was essentially a foreign body response, contrasting in a striking manner with the proliferative fibrotic response seen in the lungs of the quartz-dusted animals"—and this despite the fact that the lungs of the aluminium-treated animals contained more quartz of the same degree of fineness, as judged by both chemical and microscopical tests. The report of these experiments is only a preliminary one: only 6 rabbits were used in the quartz group and 7 in that with quartz plus aluminium; but the results, it is claimed, are uniformly consistent in each group, and the findings in a large-scale experiment with several different kinds of animals, which has now been in progress for some months, are said to be in keeping with those recorded.

The question of the relation of infection to silicosis is of course left untouched by this work, and indeed also by most of the publications on experimental silicosis. E. H. KETTLE, who broke new ground with experiments on the combined action of mineral dusts and the tubercle bacillus, was convinced of the importance of the infective factor in the causation of the disease. With this combination he was able to elicit a type of response much more akin to that observed in humans than could be obtained with dust alone. The essential lesion of pulmonary silicosis may, indeed, be primarily an infective one, which is aggravated and modified by the dust, rather than a tissue reaction to dust particles, on which an infection may be superimposed. POLICARD and DUFOURT [4] emphasise this possibility in a paper describing experiments in which B C G was used with mineral dusting. Crystalline silica has long been known to produce dangerous dust, but iron-coated silica is inert, even in combination with the tubercle bacillus.[5] It would be interesting to know the tissue response to quartz dust plus aluminium powder when used in conjunction with this bacillus. The Canadian workers have made a discovery that may prove of fundamental importance in experimental work on silicosis. It remains to be seen whether their findings will give the key to a means of retarding, if not actually preventing, silicosis in man.

[1] See *Lancet*, May 22nd, 1937, p. 1236.
[2] Heffernan, P., *Tubercle*, 1932, **14**, 109.
[3] Denny, J. J., Robson, W. D., and Irwin, D. A., *Canad. med. Ass. J.* July, 1937, p. 1.

[4] Policard, A., and DuFourt, A., *Ann. Méd.* 1937, **41**, 183.
[5] Kettle, E. H., *J. Path. Bact.* 1932, **35**, 395; *Ibid*, 1934, **38**, 201.

GUEST HOSPITAL, DUDLEY. — The contributory scheme, inaugurated here three months ago, has already a membership of 32,406 and an annual income of over £16,000 is assured. The hospital is being rebuilt in stages, and new X ray and massage departments are being provided.

ANNOTATIONS

SALVAGE OF SCHOLARSHIP

WHEN the Academic Assistance Council was formed in May, 1933, for the purpose of helping university teachers and investigators who, on grounds of religion, political opinion, or "race," were unable to go on working in their own countries, it was hoped that the need for such help would be only temporary and that by 1936 the Council would have completed its task. This hope was by no means realised. In Germany the dismissals of "non-Aryans" after the National-Socialist Government's accession to power in March, 1933, were followed by further dismissals, due in particular to the Nuremberg legislation of 1935 and to more recent rules which exclude from office those who have Jewish wives or who refuse to take the oath of loyalty to the Leader, and also some who have become embroiled in church conflicts. Further, it became increasingly clear that a permanent organisation was needed for the assistance of refugee scholars from other countries—Austria, Russia, Italy, and Portugal for example—who had been compelled to resign their posts because of their political opinions or their "race." In March, 1936, therefore, it was decided to continue the Academic Assistance Council as part of a permanent body, the Society for the Protection of Science and Learning, which should be financed by donations and by the subscriptions of its members.

Apart from its humanitarian aspect, the value to mankind of the work done by this organisation and by its co-workers is substantial. About 1600 university and other scholars have been displaced from their posts in Germany, and continuance of their work in their own country has been made impossible by denying them access to laboratories and libraries, by forbidding them to lecture, and by allowing them to publish their writings only through non-Aryan publishers; besides which they have had to face the prospect of heavy disabilities being placed upon the education and training of their children. On the other hand, they have not been allowed to take money across the border and cannot therefore subsist elsewhere unless they can find remunerative employment. The experience and ability of these men would thus have been lost if there had not been some scheme for the placing of emigrants in posts abroad. So far about 800 have left Germany, and the Society and those organisations that collaborate with it have been able to find for almost all of these either permanent or temporary appointments in universities or industrial concerns in the United States, Great Britain, Palestine, Turkey, or other countries. The civil war in Spain has been the cause of the emigration of about 60 scholars, who may or may not be prevented from ever returning to their country, and the Society has made some temporary grants to these unfortunates, pending a settlement of Spanish affairs.

The aim of the Society has been not so much to provide temporary relief for refugees, as to re-establish them. For this purpose it maintains a central appointments bureau in London,[1] makes emergency grants to those who have secured what may become permanent employment, and allots a limited number of research fellowships to those of outstanding ability. Representatives of all branches of science appear in its records, but the majority are workers in medicine, chemistry, physics, or economics. The Society coöperates closely with the organisations that deal with the relief of other classes of refugees, so that there is no overlapping and no waste of effort, and although it is at present issuing no public appeal for funds it is anxious to increase its membership so that its income shall be stabilised and not dependent upon chance gratuities.

[1] Society for the Protection of Science and Learning, 6, Gordon-square, London, W.C.1.

PHARMACY AND THE PHARMACIST

THIS week, for the fourth time since it was established, the British Pharmaceutical Conference has held its annual meeting in Liverpool. It was the 74th of the series and, fittingly, the chairman was Mr. T. E. Lescher, whose family and those associated with the old-established house of which he is now the head, have been linked with the work of the Conference ever since its foundation. Mr. Lescher holds the craft of pharmacy in high esteem. "The physician," he said in his inaugural address, "looks to the pharmacist to give him information in connexion with a product which may have been brought out only yesterday," which means that the pharmacist has to exercise unceasing vigilance. When the first meeting was held in Liverpool in 1870 there was no such thing as an aspirin tablet, and indeed no such thing as a tablet of any kind. Chloral hydrate had only just been introduced into medicine, and the stock-in-trade of the pharmacist consisted almost wholly of vegetable drugs and their preparations, with a comparatively small group of mineral salts. Great changes have been seen since those far-off days; the earliest British Pharmacopœia had then but recently appeared, and the marvels of synthetic chemistry had not been seen in dreams. Even during the last decade, as Mr. Lescher reminded his audience, the advance in medical knowledge is "little less than amazing." The emphasis, he said, is changing from the alleviation of symptoms to the removal of causes, and the number of products introduced for this second purpose is already almost infinite. If pharmacy is to be the faithful handmaid of medicine, pharmacists must equip themselves with knowledge accordingly.

The British Pharmaceutical Conference encourages pharmacists to study the development of new products so that their work as handmaids may be the more useful; but its objects and traditions go deeper than that, for it was also founded to stimulate research in pharmacy and this policy has been kept ever in view. The papers read year by year are evidence of enterprise in the advancement of pharmaceutical knowledge, and the conference affords opportunity both for publication and for criticism. One would have expected that the work of the past 74 years, which has added much to the sum of knowledge of the properties of drugs and their preparation for medical use, would have earned for pharmacy "a recognised position more in keeping with its responsibilities." The words quoted are from the chairman's address, and must not be regarded as any reflection of our own upon the standing or capabilities of the handmaids of medicine. But no one can disagree with Mr. Lescher's comparison of the status of pharmacy in this country with its status in most European countries, where the services of the pharmacist in the interests of health are logically recognised. Pharmacy on the continent has official standing to a greater degree than it has in our own country, and it is not in dispute that "our present system in Britain of allowing anyone to handle drugs and medi-

cines in payment of a five-shilling licence, encourages the exploitation of the public by the distribution of 'cure-alls,' without the slightest guarantee of any knowledge on the part of the vendor of their properties." As the chairman added, the sense of responsibility that comes from training is needed to assure the safe and proper distribution of drugs and chemicals to the public.

CHRONIC RHEUMATIC DISEASES

THE urgent cry of the large number of sufferers for some measure of relief from the rheumatic diseases naturally fixes the attention of most workers on this subject on the immediate and empiric problems of treatment, and treatment is the theme of most of the papers published in the third annual volume[1] just issued by the British Committee on Chronic Rheumatic Diseases. This work provides a collection of papers representative of current research and informed opinion in this country, together with Dr P. S. Hench's admirable survey of the last year's work in America, and a few abstracts of continental papers. There has been no advance worth speaking of in elucidating the cause and mechanism of the rheumatic diseases. Prof. C. C. Okell begins with a short authoritative examination of the value of vaccines in the treatment of rheumatoid arthritis; as a bacteriologist he can find no rationale for their use, and as an intelligent scientist he can find no acceptable evidence that, used empirically, they have produced any good effect on the disease process. Prof. J. R. Learmonth discusses sympathectomy in arthritis. The operation can be relied on to change a cold clammy limb into a warm dry one, it often relieves pain, and sometimes improvement in the arthritic condition has been reported; but at best it is only symptomatic treatment, and it is justifiable only in young patients with intractable progressive rheumatoid arthritis affecting the more peripheral joints and with some degree of abnormal vasoconstriction. Dr. Gunnar Kahlmeter of Stockholm describes his extensive experience of X ray treatment, the value and limitations of which are still rather ill-defined in England. Dr. W. S. Tegner communicates an excellent interim report on the use of gold in France and England, where several careful observers have gathered further evidence of its beneficial effect in rheumatoid arthritis; America is still, in Dr. Hench's words, "off the gold standard." But across the Atlantic, on the other hand, workers in the United States take much more interest than do those here in the treatment of gonorrhœal arthritis by artificial fever; this method has a rational basis, and apparently striking clinical success has been obtained. Among the shorter papers is a useful reminder, from Dr. H. E. Archer and Mr. G. Discombe, of the possible dangers attending the use of certain drugs—methæmoglobinæmia with phenacetin, agranulocytosis with amidopyrine and its many disguised combinations, and cincophen jaundice. Apropos of the last, Dr. G. H. Jennings provides a neat little demonstration of the fact—already known, but too often ignored—that sodium salicylate promotes the excretion of uric acid and a lowering of its concentration in the blood, in gouty patients, just as effectively as atophan does.

This report indicates the scope of the committee's influence on the scientific side; it is modest but sound, and still, we may hope, only in the nature of a beginning. But there is another side to the rheumatism problem, the economic and administrative task of making available to all sufferers such benefit as present medical knowledge can bring them. There is a long lag, in this as in other branches of medicine, between the advance in knowledge and its proper and widespread application. To shorten that lag is a large part of the plan of campaign of the Empire Rheumatism Council, which was founded by the rheumatism committee of the Royal College of Physicians of London eighteen months ago, and whose appeal for funds is now being made. Prof. F. R. Fraser commends it to notice in a foreword to this volume, and few would grudge it support. Expenditure on research is always, touching the immediate end in view, speculative; great discoveries will certainly be made in the future as in the past, but no one can foretell just where or by whom. Expenditure on the treatment of rheumatic diseases by the established physiotherapeutic methods is a gilt-edged investment, certain to produce relief of suffering and increased economic usefulness. The Empire Rheumatism Council may be expected to spend its money wisely in both of those directions.

[1] Chronic Rheumatic Diseases, being the third annual report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians. Edited by C. W. Buckley, M.D., F.R.C.P. London: H. K. Lewis. 1937. Pp. 131. 10*s.* 6*d.*

THE BUDGET OF LONDON VOLUNTARY HOSPITALS

THE Statistical Summary of the income, expenditure, work, and costs of 145 London hospitals published annually by King Edward's Hospital Fund for London gives a lot of information for a shilling. The issue for 1936 is now to hand.[1] This year the Croydon, German, and London Homœopathic Hospitals, having acquired more accommodation, have been promoted to Group II (general hospitals without medical schools having a complement of more than 200 beds); the Bromley Hospital has hopped from Group VI straight to Group IV, having increased its bed complement from 50 to 99 (including 2 pay-beds); the other hospitals have remained in the same groups. It is a condition of subsidy by the Fund that income and expenditure accounts shall be kept according to a uniform system. The expenditure is arranged under appropriate headings to enable the managers of general hospitals to ascertain whether the cost of any items is unduly high in comparison with other hospitals of approximately the same bed complement. Among special hospitals the comparison is with others admitting patients of a similar type, sex, or age. The chief items of ordinary expenditure are arranged as provisions, surgery and dispensary, domestic, salaries and wages (maintenance), miscellaneous, administration, establishment, and finance. The number of occupied beds is stated for each hospital as well as the total out-patient attendances in the year. Some curious contrasts are noticeable. For example, one special hospital has had 54·2 per cent. of its beds vacant during the year. This would seem to imply that it is not really needed in its district or for some reason is unpopular; but reference to another table shows that 99·5 per cent. of its annual receipts is derived not from voluntary gifts but is received on account of services rendered—i.e., payments from patients, from public authorities, from fees and so forth. There is moreover a surplus of income over expenditure amounting to 46 per cent. for the year. It should be added that the cost per occupied bed (£117·4) is very low. At the other extreme and in a different group is a general hospital deriving only 12·3 per

[1] Obtainable from the offices of the fund at 10, Old Jewry, London, E.C.2.

cent. of its total receipts from services rendered. Its deficit for the year is £614, or 7·3 per cent. of its total general expenditure. Only 26·7 of its beds are vacant and the statistical cost per occupied bed is even lower—i.e., £111·2. It is not easy to interpret these contrasts in general terms or to draw conclusions from the analysis here provided.

Emphasis is again laid by the Fund on the fact that high cost does not necessarily mean excessive or extravagant expenditure, though figures above the average for the particular group of hospitals need scrutiny. Hospital managers are urged to attempt to detect the source of any excess expenditure and "to reduce it wherever it cannot be justified or to justify it wherever it cannot be reduced."

"IT CAN DO NO HARM"

THIS facile phrase, quoted by Dr. Colebrook in his letter on p. 286 condemning the indiscriminate use of sulphanilamide or related drugs, has been responsible for much confusion in therapeutics. Moreover—and this is more serious—it has often had to be withdrawn when applied prematurely to potent new remedies whose dangers are not at first apparent. Dr. Colebrook is asking for greater caution in the use of sulphanilamide for prophylactic purposes and he speaks with authority when he says that there is no experimental justification at present for giving this drug to pregnant women before labour has actually started. The object of giving it as a prophylactic, either in labour or in other conditions, is almost always to prevent harm from hæmolytic streptococci, and where the risk of sepsis is small it has to be balanced against the risk of harm being caused by the drug itself—a risk that is at least appreciable and may yet prove to be graver than is now believed. There is no need, however, to recapitulate Dr. Colebrook's argument. Its wisdom is made all the more evident by the footnote he has added to his letter.

IS PITUITRIN A HORMONE?

THE path of the endocrinologist is beset with snares, and one of the most awkward is the uncertainty whether a particular extract of a gland is a true hormone or merely a chemical artefact. Where the hormone in question is of uncertain composition and not demonstrable in the blood or urine the uncertainty can only be resolved by appeal to circumstantial evidence. Parathormone, for instance, has so far defied analysis and cannot be detected in blood. Yet there is hardly room for doubt that it is concerned in normal calcium metabolism. The presumed hormones of the posterior lobe of the pituitary, in contrast, are less securely enthroned. Vasopressin is certainly capable of constricting vessels and raising the blood pressure, but it would need a great deal of assurance to assert that this substance is concerned in the normal regulation of blood pressure. The antidiuretic hormone, which may or may not be the same as vasopressin, acquires some degree of verisimilitude from the facts that diabetes insipidus is commonly associated with destructive lesions in the pituitary-hypothalamic region and that it responds to treatment with vasopressin. More direct evidence of natural secretion of the hormone has been sought for many years but, although it has been stated from time to time that pituitrin is demonstrable in such fluids as blood and cerebro-spinal fluid, none of these statements has stood the test of time, and it is evidently beyond the scope of available methods to detect directly such minute concentrations of hormone as may be present. Concentrating the suspect fluid is at first sight an easy way out of the difficulty, but the parallel increase in salt concentration makes the concentrate unsuitable for antidiuretic assay. Gilman and Goodman,[1] however, working with rats' urine, have surmounted this obstacle by dialysing the urine against tap-water across a Cellophane membrane permeable to electrolytes but not to antidiuretic hormone. Having thus removed the salt, it was a simple matter to concentrate the remaining solution of hormone. Gilman and Goodman began their work on the assumption that if the antidiuretic hormone serves any useful purpose it is presumably that of conserving body fluid in the face of threatened dehydration. They found that urine from normal rats contained no demonstrable antidiuretic hormone, but if the rats were dehydrated, either by fluid restriction or administration of hypertonic saline, considerable quantities of hormone could be recovered from the concentrated urine. A dehydrated rat may excrete as much as 0·25 unit of antidiuretic hormone in 72 hours—i.e., about 250 times the minimal dose that will inhibit diuresis. The greatest rate of excretion is reached within 48 hours, and further dehydration does not increase the rate. That the excreted hormone is derived from the pituitary is shown by the fact that hypophysectomised rats excrete none in response to dehydration. It seems clear, therefore, that in the rat, at least, the antidiuretic hormone is a true hormone concerned in normal water metabolism. If it can be shown that the same is true of the human subject, it should become possible to investigate the rôle of this hormone in disease.

VITAMIN F AND THE COMMON COLD

FROM an experiment on rather a small scale Oncken[2] concluded that consumption of oils containing unsaturated fatty acids might prevent colds. This possibility has now been further explored by Eldon Boyd and Ford Connell,[3] of Queen's University, Kingston, Ontario. A total of 106 young men, mostly medical students, coöperated in their investigation. They were divided into two groups, 41 who said they were susceptible to colds and 65 who said they were not. Both groups were observed over a preliminary period of seven weeks beginning on Jan. 1st of this year, during which the "susceptibles" had 63 colds, or 1·54 per person, and the "non-susceptibles" had 53, or 0·82 per person. The average duration of each cold was 7·2 days in the first group and 4·7 days in the second. During a second period of seven weeks each of the susceptibles was given 15 minims daily of vitamin F (a purified concentrated mixture of linoleic and linolenic acids prepared from refined linseed oil); the non-susceptibles served as controls. During this time the 41 susceptibles had 23 colds (compared with their previous 63) or 0·56 per person, with an average duration of 4·5 days. The 65 non-susceptibles had 41 colds (compared with their previous 53) or 0·63 per person with an average duration of 6·1 days. In other words the incidence fell nearly twice as heavily on the susceptibles during the first period, and the average duration of their colds was longer, whereas in the period during which they were specially treated they were slightly better off than the non-susceptibles. It is necessary, however, to look carefully at this result. The original division of the two groups is

[1] Gilman, A., and Goodman, J., *J. Physiol.* 1937, **90**, 113.
[2] Oncken, M., *Illinois med. J.*, 1935, **67**, 236.
[3] Boyd, E. M., and Connell, W. F., *Canadian med. Ass. J.* July, 1937, p. 38.

not ideal; it would have been better to have divided the men at random to make the groups initially equal. Clearly if some other factor were in issue—e.g., a seasonal distribution of colds—it would have more scope to show itself in those who had many colds in the first period than in those who had few. To obviate this possible effect one may compare the men in groups with equivalent experiences in the initial period. There were 8 susceptibles and 26 non-susceptibles who had no colds at all in the first period; three-quarters of the former and just over half the latter had no colds in the second period also. There were 14 susceptibles and 29 non-susceptibles who had one cold in the first period; of the former 57 per cent. and of the latter 48 per cent. were better off by having no cold in the second period. And taking a final broad group to give bigger numbers there were 19 susceptibles and 10 non-susceptibles who had two or more colds in the first period; of the former 84 per cent. and of the latter 80 per cent. had fewer colds in the second period than in the first. Each comparison, it will be seen, slightly favours the treated group, but the differences, viewed in this way, are quite small. It must also be noted that 14 of the 41 men under treatment, or roughly a third, reported disagreeable reactions after taking the doses of purified linoleic and linolenic acids. Diarrhœa, nausea, and vomiting were the chief effects. Usually these symptoms were temporary and disappeared on taking the substance with meals rather than between them; but sometimes treatment had to be stopped.

On the whole the results of this study are suggestive but certainly not conclusive or even greatly encouraging.

PROFESSIONAL REGULATION

THOUGH Parliament has not yet passed it into law, a Bill has been printed which proposes to set up a register of hairdressers and to empower a central authority to strike names off the register for "infamous conduct." Those last two words, in their original context in the Medical Act, have puzzled many. It is an indirect and unexpected compliment to the professional organisation of medical practice that they should be revived to-day. Whatever the connotation of infamy, it is at any rate a public advantage that a body of persons practising a common vocation should be encouraged to regulate standards not only of skill but also of ethics. Last January Mr. Justice Atkinson observed of certain unqualified practitioners (in Sones *v.* Foster) that, while anybody can call himself a naturopath, the more reputable have formed associations and have done their best to establish standards by instituting a system of examinations. In the July issue of the *British Journal of Physical Medicine* Dr. Gerald Slot quotes this judicial dictum in the course of discussing the status and legal position of unqualified practice. Dr. Slot regards as desirable the movement towards incorporating the various societies which demand proper training. The public, he says, would like the chance to assure itself of the credentials of the unregistered practitioner; at present the impressive letters used after a man's name can be most misleading. In Sones *v.* Foster, where the learned judge was a trifle severe on the orthodox practitioners' assumption of a monopoly of knowledge of the healing art, it was laid down that people need not consult an unorthodox practitioner unless they like; but, if they do consult him, they have the right to expect the average skill, knowledge, and efficiency of the body to which he belongs. This statement, however, scarcely takes into account the difficulty of establishing the average standard; there is seldom a recognised body to formulate anything of the kind; the different cults disagree. Dr. Slot is ready to concede that medicine, tending to conservatism, owes a debt to unqualified practice; osteopathy and naturopathy, for instance, have usefully drawn attention to manipulative surgery and dietetics. But he concludes that intimacy with disease gives the best prospect of successful treatment and that the necessary knowledge is obtained only by a real study of pathology and by daily contact with illness. Unregulated practice, it may be added, shows itself specially dangerous to the public when it descends to the more specious abuses of advertisement.

CALCIUM AND PHOSPHORUS IN BONE DISEASES

BONE, like fibrous tissue, consists of cells and a matrix of fibres, but has in addition a high content of mineral matter. The exact chemical nature of this mineral deposit is not certainly known, but it is usually considered to be a complex carbonato-phosphate of calcium. In those clinical conditions where there is a withdrawal of the mineral material, or where it is improperly deposited, it is usual to speak of "decalcification," or a "failure to calcify." It is difficult to see why the emphasis should have been laid traditionally on the calcium; it would be equally reasonable to speak of "dephosphatisation" and a failure to deposit phosphate.

Largely, it may be presumed, because of the emphasis on the metallic component of bone salt, we have come to think of diseases like Paget's and osteitis fibrosa as being due to an inability to hold calcium; and rickets is commonly regarded as a condition resulting from the improper absorption of calcium from the gut. But this view has been hotly contested—e.g., by Taylor and Weld [1]—and the effect of vitamin D has been held to have nothing to do with the absorption of calcium; although some recent work from Cambridge [2] appears to indicate that for the rat at least there is a relation between the gut absorption and the vitamin. It is a commonplace, however, that the serum calcium of children suffering from rickets is at a normal level, while the plasma phosphate is commonly lowered. Kay and Guyatt [3] suggested that experimental rickets due to vitamin D deficiency is attributable to a failure to absorb sufficient of the dietary phosphorus. They succeeded in producing a phosphorus-deficient rickets by precipitation of the phosphate in the gut as the highly insoluble phosphate of beryllium, by addition of this element to the diet. Likewise "strontium rickets" has been observed,[4] although Sobel, Cohen, and Kramer [5] are inclined to think that the phenomenon is a more complex one than a simple removal of the phosphate ions.

In a recent communication from the Onderstepoort Institute for Veterinary Education and Research, South Africa, Du Toit and Malan [6] claim to have shown that in domestic animals rickets is due to a deficiency of dietary phosphorus. Cattle, goats, sheep, pigs, and horses have been found to develop

[1] Taylor, N. B., and Weld, C. B., *Brit. J. exp. Path.* 1932, **13**, 109.
[2] Nicolaysen, R., *Biochem. J.* 1937, **31**, 107, 122.
[3] Kay, H. D., and Guyatt, B. L., *J. biol. Chem.* 1931, **92**, xl.; *Nature*, 1933, **131**, 468.
[4] Sobel, A. E., Goldfarb, A. R., and Kramer, B., *Proc. Soc. exp. Biol. Med.* 1934, **31**, 869.
[5] Sobel, A. E., Cohen, J., and Kramer, B., *Biochem. J.* 1935, **29**, 2640.
[6] Du Toit, P. J., and Malan, A. I., *Nature*, 1937, **140**, 153.

a rachitic condition on dietaries which lacked only phosphorus, being adequate in other respects, including calcium and vitamin D. They find that insufficient calcium does not produce rachitic lesions, but instead an entirely different bone disease—an osteodystrophia fibrosa (osteofibrosis). Osteoporosis was invariably associated with both diseases. In typical experiments calves and steers received diets of which the only deficiency was in the amounts and proportions of calcium and phosphorus. With abundant calcium but low phosphorus, severe rickets and osteoporosis developed, but no osteofibrosis. With an inadequacy of both calcium and phosphorus, rickets developed early in the experiment with osteofibrosis later. Excess of phosphorus with low calcium led to the production of osteofibrosis and bone atrophy, but rickets did not develop. Abundant vitamin D was present in all experiments.

These South African experiments should promote a better understanding of the ætiology of the generalised bone diseases, and a more proper estimate of the relative importance of the factors thought to be involved. The emphasis in current use is probably correct when we speak of "decalcification" in von Recklinghausen's and Paget's diseases; but if the mineral metabolism of humans is the same as that of the animals tested we would perhaps be nearer the truth if we thought of rickets and osteomalacia as derangements of phosphorus metabolism, instead of stressing the calcium side of the picture, as has been the general custom. The practical application of the change of outlook engendered by experimental evidence as far as humans are concerned depends on this question of the similarity of mineral metabolism. It seems at least possible that in the future the widespread use of vitamin preparations, either in conjunction with or containing calcium (usually as the gluconate), for children and nursing mothers, will give way to the use of preparations which contain phosphorus in proper proportion.

ANALYSIS OF SUSCEPTIBILITY TO CARCINOMA

SOME carefully planned and conducted experiments on the combined action of œstrone and benzpyrene on the skin of mice are recorded by Dr. M. D. Gilmour.[1] She finds that if the two substances are applied simultaneously to different patches of skin, or if the œstrone is given a lead in time, the treated animals then develop a greater number of papillomata, and do so at an earlier date than do control groups treated with the benzpyrene alone. Moreover a larger number of the papillomata become malignant under the combined treatment. The meaning of these experiments may not at first sight be apparent. What they do is to give some insight into the term susceptibility. When, for example in a group of workers exposed regularly to the same dose of coal-tar or shale oil, a certain proportion develop warts at the cancer age, and certain others at an earlier period of life, while the remainder do not produce tumours at all, we say that the group shows differing degrees of susceptibility to the same carcinogenic agent. We have no idea wherein this susceptibility lies. Gilmour's experiments go some way towards an analysis. Translated into terms of human life they might indicate that of a group of workers exposed to carcinogenic agencies, those in whose circulation there is excess of œstrone would be the first to develop papillomata, and among them there would be a greater number with lesions. The effect of œstrone must be very potent for it can raise the total number of warts which appear in mice by about 30 per cent. There still may remain some mice which are completely resistant to either agent or both, but to this insusceptibility we have as yet no more than the clue, though a strong one, afforded by the recent work of Peyton Rous on the Shope papilloma virus. Another important aspect of the work on the combined action of œstrone with a carcinogen arises from the probability that œstrone has a general constitutional effect. Its action is not exerted on mammary gland cells alone, as might have been thought from a consideration of the early experiments of Lathrop and Loeb,[2 3] and the more recent ones of Lacassagne.[4] Nor is it confined to endocrine organs as the work of Cramer and Horning [5] at one time seemed to indicate, or even to generative organs.[6] Gilmour's work shows that epidermal cells also can be affected by œstrone though detection of any action is indirect. The question next arises, does this hormone exert any specific effect on cells already malignant? Gilmour's answer is in accord with all other experience concerning malignant cells. Once the change has taken place, the chemical or physical agent which played a part in causing it no longer has any influence on the subsequent course of the tumour.

[1] Gilmour, M. D., *J. Path. Bact.*, 1937, **45**, 179.

MEASLES SERUM

THE London Fever Hospital has asked us to state that, owing to the difficulty of obtaining a large amount of convalescent measles serum, its small supply, while always available for the general public, has to be reserved for young children and more especially for weakly and ill children in whom an attack of measles would be dangerous. It is impossible to supply this serum for every contact. The hospital authorities hope that publication of this information will obviate irritation or disappointment arising from a refusal of help to practitioners who wish to protect older people. The resident medical officer is always glad to hear of cases in which it is permissible for him to provide the serum.

IN our leading article last week on Anomalies in Health Insurance we said that according to the Fourth Valuation the number of insured persons belonging to societies that find themselves unable to give additional benefits is 2,219,525, "comprising 22 per cent. of the insured men and 25 per cent. of the insured women." These percentages should be 12 per cent. and 15 per cent. respectively, as is evident from the summary of the Report published on p. 222 of the same issue.

THE Goldsmiths Company have offered a sum of £6000 to found and equip an observation centre for child delinquents, if arrangements can be made for it to be maintained under suitable management. To such a centre the courts will be able to send children who are psychologically maladjusted, and there they can be watched for a few weeks by experts under medical guidance. The centre will be used mainly for children in the London area. In announcing the offer the Home Office expresses appreciation of the public spirit of the Company. Their offer will in fact make a beginning in filling a distressing gap in our penal system.

[2] Lathrop, A. E. C., and Loeb, L., *J. Cancer Research*, 1916, **1**, 1.
[3] Loeb, L., *J. med. Research*, 1919, **40**, 477.
[4] Lacassagne, A., *C.R. Acad. Sci., Paris*, 1932, **115**, 630.
[5] Cramer, W., and Horning, E. S., *Lancet*, 1936, **1**, 247.
[6] Perry, I. H., and Ginzton, L. L., *Amer. J. Cancer*, 1937, **29**, 680.

SPECIAL ARTICLES

A STATISTICAL CONTRIBUTION TO THE HISTORY OF EXAMINATIONS OF MEDICAL STUDENTS

By Prof. MAJOR GREENWOOD, D.Sc., F.R.C.P., F.R.S.

AND

E. LEWIS-FANING, B.Sc., Ph.D.

THANKS to the energy of Sir Philip Hartog and his colleagues, the rights or wrongs of examinations are a question of the day and have stimulated psychologists, mathematicians, and statisticians to many symbolic and arithmetical feats.

The examinations of medical students have not figured very prominently in this tournament but the medical profession has been longer and more sedulously examined than others. Confining ourselves to England and Wales, we possess a lively account of an examination at Surgeons Hall of nearly two hundred years ago, while the Royal College of Physicians has been steadily examining for about four hundred years. Unfortunately the College of Physicians only examined orally and nobody is known to have made a note of the questions he was asked, nor are statistics of results available, although they may exist in a mutilated condition. We say mutilated because Munk recorded, with proper indignation, that the loss of certain eighteenth century records is believed to be due to the desire of an officer of the College to conceal the fact that *he* had once been ploughed.

Interest in medical examinations quickened early in the nineteenth century and, after the passing of the Medical Act of 1858, the examining of medical students became a staple industry. The student had indeed a wide choice of examinations, but examined, frequently examined, he must be, and, as the General Medical Council had a passion for statistics, statistics of examinations became available. These statistics played a part in the vigorous controversies of sixty to eighty years ago when the grievances of medical students in London were first widely ventilated.

The literature of that controversy is now almost forgotten; it included a contribution from a surgeon still remembered in his own medical school (the London Hospital), Walter Rivington (1835–97), but probably not even a name elsewhere. Two editions of Rivington's book appeared, the first in 1879, a volume of 477 pages to which the Royal College of Surgeons in Ireland awarded a prize of £200. In keeping with the tradition of prize essays, this had a Latin motto—*Nil actum reputans si quid superesset agendum.* The author took this motto to heart and so did the Royal College of Surgeons in Ireland, for in 1888 another essay appeared and, we infer, another prize of £200 was awarded. The motto this time was in English—*Every man is a debtor to his Profession*—and the 477 pages had grown to 1200.

Small Proportion of Medical Students taking London Degrees

The envy of modern statisticians contemplating a reward of four hundred pounds sterling for a statistical—or at least mainly statistical—study of the medical profession may prejudice equitable judgment. So we will confine ourselves to remarking that the statistical matter is diffuse and the second essay, as a piece of book-making, not very successful. Perhaps the nine months which, according to the preface, were the period of gestation, were insufficient for the full-term birth of so large an animal. But we add, in justice to the memory of a stout fighter, that the non-statistical sections of the book are (even to statisticians) good reading.

Rivington's attitude towards medical authorities fifty years ago was much like that of the founder of THE LANCET a hundred years ago. He had not Wakley's command of invective but could be trenchant, and his comments upon the motives and actions of royal colleges and even universities have no more reverence than Low's cartoons. These matters, however, belong not to statistics but medical politics and do not come within our scope. The statistical interest of Rivington's book is that he gave arithmetical demonstration of the fact that the proportion of medical students in London who achieved a university degree in medicine was small, and that he discussed statistically the reason for this, as he held it, defect. We propose to compare some of his data with those of more recent times and to consider critically the adequacy of the material.

WHICH EXAMINATION IS THE OBSTACLE?

Rivington attributed the small output of medical graduates by the University of London itself not to the severity of that university's final examination but to the severity of the matriculation examination, of the preliminary scientific (now more often called 1st M.B.), and of the intermediate examination (2nd M.B.). He was a particularly severe critic of the preliminary scientific and matriculation examinations. Current opinion, we think, inclines to make the final examination the principal offender. There are, of course, very great difficulties of comparison. Sixty years ago nobody was exempted from anything, and chemistry, physics, and biology were not school subjects. But even as recently as 1911 there was still a tendency to blame the initial rather than the final obstacles to a medical degree (see, for example, questions 13,446 et seq. Minutes of Evidence, Royal Commission on University Education in London, Cd. 6312 of 1912). The first question which arises is whether this impression is correct.

Methods of Statistical Approach

At this point it is material to inquire what is the correct statistical method of solving problems of this kind. The answer is, of course, the method of what vital statisticians call a Life Table. We ought to follow the careers of each generation of students from the beginning of their medical education until all are launched on their careers or have sunk. In theory this is a perfectly simple operation. One makes a list of entrants to a medical school in the year X and traces their careers for the next Y years, Y being a number not less than, say, 7. We can then, without any abstruse calculations, determine how many broke down at each fence in the professional obstacle race.

Actually this very simple process has seldom or never been carried out on an adequate scale. One reason—apart from the psychological fact that a great majority of medical men regard *all* statistical operations with feelings of dislike and contempt—is that although the process is simple it is laborious and can only be executed by those having access

to the data. Those having such access have not yet been convinced that the end would justify the means. Consequently most statistical inferences have been based upon data of a less adequate kind. Rivington used mainly the statistics of examination results. More recent authors have compared the annual quotas of medical graduates and licentiates. These data are regularly compiled and need no *ad hoc* grubbing in archives, and they clearly have *some* value; let us consider their limitations.

THE LIMITATIONS OF DEDUCTIONS FROM PUBLISHED DATA

First, as to examination statistics. For London University we have data of candidatures and passes from the beginning of the university. *If* no candidate were allowed to sit again for an examination at which he had failed (which is true of final honours schools in the ancient universities) such data would be sufficient. It is true that even then we could not prepare an absolutely correct survivorship table, because the interval between passing examination (*a*) and sitting for examination (*b*) would not be absolutely rigid. Still, if we knew that the average interval between candidatures was, say, two years, we should not be much in error in following this plan. If 100 candidates sat for (*a*) of whom 20 failed, and two years later 70 sat for (*b*) and 50 passed, it would be fair enough to say that of 100 starters, 50 reached the goal, 20 fell at the first hedge, 10 more left the course, and 20 fell at the last hedge. But actually for qualifying examinations an unsuccessful candidate may try again. Now we are perplexed. Simplify our case by assuming that everybody who passes the earlier examination *does* try to pass the second (a wholly erroneous assumption) and that the proportion of passes at the earlier examination is 80 per cent. and at the later 70 per cent., then we might argue that of those entering for the first examination the proportion passing both would be 0·8 times 0·7 or 56 per cent., which would be correct had none dropped out. But suppose those failing at the first trial sit again? Evidently if the chance of failing were really constant, then, however large it might be, the probability of success would become with a sufficient number of trials as large as one pleases, in the sense that of a persistent group of candidates the proportion continuing to fail would dwindle. Say the chance of failing were three in four, then the chance of failing twice would be 0·5625, of failing three times 0·4219, and so on, and although our persistent sitter *might* never pass, the average proportion of those who sat at least 10 times and were always ploughed would be very small. Of course the objection is that the chance of success is not the same at each trial and few candidates will try their luck even as many as three times. Some restricted modern data we have seen suggest that for the London medical final the proportion of successes at the first trial is about 70 per cent., at second or later trials about half this, while of those who fail at the first trial only about two-thirds sit again.

If then, as in the old data, we have *only* examination statistics, this is the difficulty. According to Rivington's data of 60 years ago the percentages of passes at the three professional examinations in the University, viz., the 1st M.B. (preliminary scientific), 2nd M.B., and Final were 50, 60, and 80. Is the product of the three, viz., 24 per cent., a fair measure of what we want, viz., the proportion of those who entered the race and passed the winning post?

On the one hand it is too harsh because it makes no allowance for second and subsequent candidatures, on the other too lenient for it makes no allowance for those who having passed one examination did not sit at all for a later one. It would be pleasant to believe that the two errors cancelled out, but statistically rash. A historical comparison would only be sound were some earnest seeker for a thesis subject to explore the archives (if preserved) and construct from the nominal rolls a correct survivorship table. Many degree theses have less interesting subjects. The University still prints data comparable in form with those Rivington used, but their real value is even less than it was. In Rivington's time, the University was adamant, it did not recognise the tests of other universities and, of course, there was no Higher School Certificate. Passes and failures for the 1st M.B. do not now account for all the medical starters, while passes and failures for separate *parts* of the later examinations are aggregated. Nothing can therefore be done with the modern figures along Rivington's lines. A short cut is suggested by the following statistical process. According to Table 6 of the last report of the University Grants Committee, in the academic year 1934–35, 202 students in London medical schools took degrees in medicine (including dentistry) and 976 took diplomas. Since the committee explicitly excluded medical degrees of Oxford and Cambridge (164 in number) the degrees must be mainly London degrees; we form the ratio of 202 to (976 + 202) and reach the proportion of 17·1 per cent. as that of London medical graduates, an even gloomier result than the conjectured 24 per cent. of 60 years ago. Actually the process, although it has been adopted in serious argument, is merely a statistical blunder. It would only give a correct result if (*a*) no person who took a medical diploma also took a medical degree, (*b*) entrants to the profession were sensibly constant from year to year, (*c*) only persons who were or might be candidates for London degrees could figure under the total of diplomates. None of these assumptions is correct although (*b*) is not *wildly* wrong. As to (*a*), according to recent data about 90 per cent. of London students also take a diploma, while as to (*c*) diplomates in London will necessarily include those diplomates who graduate in Oxford or Cambridge. The fallacy involved may be illustrated even without the help of the error due to (*c*). If of every 100 students who qualify 50 per cent. take a London degree and of these 90 per cent. also take a diploma, the annual quota (assuming (*b*)) of degrees and diplomas will be 50 degrees and 95 diplomas (the latter made up of 45 graduates who also took diplomas and 50 persons who took only diplomas). Using the incorrect method we should reach 50/145 as the proportion graduating or less than 35 per cent. instead of 50 per cent. The right answer is obtained by adding to the 95 diplomates the 5 non-diplomates and using that sum as the denominator, giving us 50/100.

There is, however, one suggestion in the table which is of interest and although not strictly relevant to the point under discussion has a bearing upon it. This is the relative increase in the graduations of Oxford and Cambridge. According to the figures quoted by Rivington (op. cit. p. 257) sixty years ago, in the quinquennium 1876–80, Oxford and Cambridge granted 92 bachelors' degrees in medicine, London 143, a ratio of 1 to 1·6; in 1934–35 the ratio was 1 to 1·3. As annual graduations, the Oxford and Cambridge figures have increased to nearly nine times the old figure, those of London to seven times the figure of sixty years ago. Some unpublished data we have seen *suggest* that in the London medical schools the proportion of undergraduates of the ancient universities under clinical instruction is equal to or greater than that of the medical undergraduates of London University. In view of this fact it is, of course, only in a purely formal and administrative sense that the London clinical schools can be described as schools of London *University*; a large and apparently increasing proportion of the students in them are not primarily interested in the London University at all; they have another affiliation. This statistical fact is frequently overlooked.

TABLE OF OXFORD AND CAMBRIDGE "WASTAGE"

Registered in—	1900–09.								1910–33.								Difference ±SE between 1900–09 and 1910–33.			
	Oxford.			Cambridge.			Diff. ±SE %	S or NS	Oxford.			Cambridge.			Diff. ±SE %	S or NS	Oxford.	S or NS	Cambridge.	S or NS
	No.	W	%W	No.	W	%W			No.	W	%W	No.	W	%W						
London ..	29	1	3·4	163	19	11·7	8·3 ± 6·09	NS	139	12	8·6	483	120	24·8	16·2 ± 3·94	S	5·2 ± 5·5	NS	13·1 ± 3·51	S
Provinces ..	71	9	12·7	408	57	14·0	1·3 ± 4·43	NS	278	41	14·7	1131	418	37·0	22·3 ± 3·14	S	2·0 ± 4·66	NS	23·0 ± 2·67	S
London + Provinces	100	10	10·0	571	76	13·3	3·3 ± 3·62	NS	417	53	12·7	1614	538	33·3	20·6 ± 2·50	S	2·7 ± 3·64	NS	20·0 ± 2·19	S

Here the wastage (W) at Cambridge is always in excess of Oxford and the wastage in both universities is greater in 1910–33. Hence differences are all positive.

OXFORD AND CAMBRIDGE GRADUATES REGISTERING BY VIRTUE OF DEGREE ONLY
(without obtaining diploma of the Conjont Board)

Registered in—	1900–09.								1910–33.								Difference ±SE between 1900–09 and 1910–33.			
	Oxford.			Cambridge.			Diff. ±SE %	S or NS	Oxford.			Cambridge.			Diff. ±SE %	S or NS	Oxford.	S or NS	Cambridge.	S or NS
	No.	Without Conjoint.	%	No.	Without Conjoint.	%			No.	Without Conjoint.	%	No.	Without Conjoint.	%						
London .	28	14	50·0	144	47	32·6	17·4 ± 9·88	NS	127	48	37·8	363	43	11·8	26·0 ± 4·01	S	12·2 ± 10·22	NS	20·8 ± 3·76	S
Provinces .	62	24	38·7	351	95	27·1	11·6 ± 6·24	NS	237	100	42·2	713	84	11·8	30·4 ± 2·96	S	3·5 ± 7·03	NS	15·3 ± 2·44	S
London + Provinces	90	38	42·2	495	142	28·7	13·5 ± 5·29	S	364	148	40·7	1076	127	11·8	28·9 ± 2·38	S	1·5 ± 5·96	NS	16·9 ± 2·04	S

Here the percentage without Conjoint is always greater at Oxford. At Oxford it is higher in the London section in 1900–09 than in 1910–33 but higher in the Provinces in 1910–33 than in 1900–09.

Differences are to be regarded as significant (S) when they exceed twice their standard error (SE).

Estimation of Wastage from Unpublished Data

Returning to the purely arithmetical problem, we conclude that *none* of the published data permit us to compute the present wastage rate. Some unpublished data we have consulted do, however, throw light upon wastage between the intermediate and final hedge. These relate to a particular sample of London University students, viz., the 425 who in the years 1926 and 1927 completed the second examination for medical degrees. The names were traced to the year 1934—i.e., long enough to make it probable that nearly all who would do so had qualified. Actually 26 (including two deaths) never did qualify. Of the remaining 399 all qualified and 250 graduated in medicine in the University. Of the 149 who did not graduate 63 sat for but failed in the M.B., B.S. examination (30 more than once); the remainder did not sit for the final examination at all.

If we define *wastage* as the proportion of eligible candidates who fail to graduate, then the wastage after the preclinical stage of London University students is about 37 per cent. and more than half of this wastage is accounted for by students who did not even attempt to pass the University's final examination. It will be noticed that the wastage accounted for by failure in the final examination is only 16 per cent., and that of those who sat for the final nearly 80 per cent. were successful. How do these results compare with those of 60 years ago? We have no means of knowing, because Rivington did not obtain any data of the wastage due to failure to sit. All we can say is that the wastage due to failure to pass of those who did sit is much the same as it was in Rivington's time and hardly suggests that the mere standard of severity of the final examination is draconian.

We have spoken of wastage wholly with reference to the final stage. So far as wastage at the earlier stage is concerned, we have no data of a similar character. We have reason to believe, however, that adequate statistics will shortly become available and do not propose to speculate. But we have given attention to obtaining information respecting the fates of those students *in* London who seek the degrees of senior universities. These students receive the same instruction as their London University contemporaries but sit for other graduating examinations. How many of them succeed? Clearly the right answer can only be given by an analysis of official data to which we have no access. But there may be some interest in using information open to all the world, viz., that contained in the Medical Directory. That, of course, restricts us to the university students who at least succeeded in qualifying and to persons still living.

These restrictions are not important. There is no reason to suppose that the death-rate differentiates seriously between those who qualify by licence and those who graduate as well, and to judge by the sample mentioned above, a great majority of London University medical students reach the Medical

Register. Whether our record of wastage is accurate is another question.

We adopted the following plan.

The Medical Directory of 1935 was used and the names of persons who registered between 1900 and 1933 were examined. As medical graduates of Oxford or Cambridge were counted all those who recorded an M.B. or M.D. or a B.C. As wastage—in the purely statistical sense—we counted :—

(1) All who entered Cambridge (or Oxford) as a place of study but took no medical degree of those universities.

(2) All who recorded a B.A. obtained within five years before the date of medical registration, unless it was specifically stated that the Arts degree was taken in a field wholly unrelated to medical study.

Obviously there is some risk of error in both directions. A man who did not take a degree at all and did not record Oxford or Cambridge as a place of medical study would not be included. Some of our included B.A.'s may have done no preclinical work at their universities. We do not think these objections of much importance, because the great majority of those entries contributing to the wastage data had recorded the university as a place of study. Only males are included in this analysis, the university regulations regarding women students having varied during this period, making their inclusion inadvisable.

Statistical Evidence Obtained

The Table sets out the results obtained. For reasons which will appear we tabulate both wastage and the proportions of medical graduates who entered the Medical Register by virtue of their degrees only. There is a large choice of licences to practise, but their separate tabulation would be wasteful of space ; the immense majority of the licences obtained were diplomas of M.R.C.S. and L.R.C.P.

The first point to notice is that over the period 1910–33 the Cambridge wastage is nearly the same as that of the London sample for 1926–27. That showed 149 non-graduates out of 399. For the Cambridge 1910–33 set we have 538 non-graduating out of 1614. The arithmetical difference between the percentages is less than twice the standard error of the difference and might well arise as a freak of sampling. It must, however, be noted that all in the London sample had completed the university preclinical stage. Our method does not distinguish between those Oxford and Cambridge men who fell out before passing in anatomy and physiology and those who had only the clinical examination to complete. We have no data to decide the importance of this. Provisionally, we should hold that the strictly comparable London wastage would be rather greater than that of Cambridge. It does, however, appear that the two wastage rates are of the same order of magnitude. If, as has been asserted, the authorities of the London University are perturbed by their medical wastage presumably a similar anxiety haunts the dreams of the academically powerful in Cambridge.

Another statistical point is noteworthy. It has been suggested that London students, meaning London *University* students, have a peculiarly intimate relation to the Conjoint Examining Board in England. So far as this may be measured by the frequency with which a university degree in medicine is combined with a licence (practically always taken before the degree) the suggestion is without foundation. From the data referred to above it is calculated that for the years 1926–27 the number of London students who qualified by virtue of degree only was 14·4 per cent. The comparative figures given in our Table are, for Oxford 40·7 per cent. and for Cambridge 11·8 per cent. There *is* thus a significant difference in this association between London and Oxford students, none between London and Cambridge students. A corollary is that if it were desirable (we are not suggesting that it is desirable ; that is not a statistical question) for London University to take counsel with the royal colleges, the same course might commend itself to the University of Cambridge.

The most striking statistical result of all, is the present contrast between Oxford and Cambridge. For the generation of 1900–09 there is no significant difference and the present-day Oxford wastage does not differ significantly from that of a generation ago. But the present-day Cambridge wastage is much greater than that of Oxford and much greater than the past Cambridge wastage. Statistically speaking, this is the safest part of the analysis, because the indices of wastage, whatever their defects, are fairly comparable as between past and present and as between one university and another. It will also be seen that almost four times as large a proportion of Oxford men do not trouble the Conjoint Examining Board as of Cambridge men, and that the proportion of Cambridge examinees in Queen-square is almost three times as great as of those on the Embankment. The proportion of men who have not paid fees to the Conjoint Board has fallen.

The Table shows other details, for instance, the difference between wastage of the London and provincial practitioners (or residents) but these do not call for extended notice. We may, therefore, conclude our statistical analysis.

A Theory to Account for the Wastage

To interpret the results not only requires more intimate knowledge than we have but would raise controversial issues which have no place here. We cannot, however, resist sketching a theory, suggested by some informal conversation with persons of experience which does not, or at least we think does not, glance at matters of current controversy.

The theory is that both London and Cambridge wastage is due to economic factors, but factors working in quite different directions. It is not disputed that in point of time (whether in point of intellectual difficulty is disputed) a licence is easier to obtain than a medical degree of any of the three universities. Therefore if the resources of a student or of his parents fail he may be economically forced to abandon hope of a degree. This, it is suggested, is the predominant factor of the London University wastage. Now Cambridge is still a much larger medical school than Oxford, the social prestige of membership of either of the ancient universities is great, and Cambridge is much more closely identified by the public with "science" than is Oxford. There may have grown up at Cambridge a class of medical students who, and whose parents, are content with such prestige as residence and graduation in the arts faculty confer and satisfied to base their right to practise upon a licence. Wastage of this kind would not be due to economic stress but to an economic, or sociological, judgment that the general public does not really care much whether "the doctor" is a "real" doctor or not but does care a good deal whether he is a Cambridge man or not. The hypothesis is interesting, we shall not discuss it. Perhaps we have said enough to show that the statistics of medical graduation might be a starting-point of many curious inquiries.

MEDICINE AND THE LAW

More Problems of Damages

ON July 10th, in noticing the decisions in Rose *v.* Ford and Roach *v.* Yates, comment was made upon the difficulty of assessing damages where, by the defendant's negligence, a healthy and athletic man has been turned into a permanent invalid or where a figure must be placed upon the diminished expectancy of life. Further instances have since occurred. Dr. D. J. C. Mangan was killed in a motoring accident a year ago. He was 32 years of age; he was unmarried; he held a post on the staff of an institution for mental defectives. How were the lost prospects of his career to be valued? According to Lord Atkin's judgment in Rose *v.* Ford, damages for diminished expectancy of life could be computed and ought to be computed. The Lord Chief Justice awarded £500 to Dr. Mangan's mother (to whose support the dead man had contributed £130 a year), £57 for funeral expenses, and £2000 for the diminished expectation of Dr. Mangan's life. This novel element of increased damages for shortened prospect of living is causing no little perturbation to insurance companies. If the awards continue to increase, the companies will doubtless find means of distributing part of the burden of the additional liability among the members of the public who insure themselves.

There is likely to be an appeal over the figure of £2000 awarded in Dr. Mangan's case. The Court of Appeal, of course, can increase as well as reduce an award. In Roach *v.* Yates the damages were more than doubled on appeal. And last week, in Coates *v.* Rawtenstall Corporation, an award of £1300 at Manchester assizes was increased to £3000 in the Court of Appeal. A child had been injured while sliding down a chute in a recreation ground, a chain having been negligently left fastened across the lower end of the slide. The child broke his thigh and paralysis supervened. It would be foolish to suggest that awards of this kind could be standardised; but, if Dr. Mangan's case reaches the Court of Appeal, it will be interesting to see what value the judges place upon the loss of professional prospects.

Septicæmia or Agranulocytosis?

At an inquest in Manchester, reported in the *Manchester Guardian* of July 15th, the death of a woman, aged 59, was attributed by some witnesses to septicæmia and by others to agranulocytosis following the taking of doses of amidopyrine in tablets of Yeast-Vite. Her husband said that his wife's health had always been good. She had taken Yeast-Vite occasionally since 1931. She took two tablets on each of the three days before June 6th. At the beginning of June she scratched her finger. On June 5th, when she felt definitely ill, her doctor found that her temperature was 102° F. There was a red swelling on the finger and he incised it. Next day he ordered her removal to the Royal Infirmary, apparently telling the hospital authorities that he thought she was suffering from blood-poisoning.

The Manchester city analyst, called at the inquest, expressed the view that the drugs amidopyrine and phenacetin contributed to the cause of death, though in cross-examination it was suggested that his opinion could scarcely outweigh that of a qualified medical practitioner who, after seeing the patient, had diagnosed septicæmia. Dr. David Lloyd Griffiths, who also gave evidence, considered that death was accelerated by the Yeast-Vite. The inquest was adjourned in order to enable the manufacturers to be represented.

The retailer who had sold the tablets to the deceased said that he had never received any notice from the manufacturers to the effect that a new formula had been substituted or that there were any restrictions on the sale of the patent medicine. He was the manager of the local branch of the Coöperative Society. Another witness said that a notice calling in all Yeast-Vite stocks was contained in the weekly price list sent to all branches of the society in May, 1936. For the manufacturers it was stated that for many years Yeast-Vite had been sold at the rate of 80,000,000 tablets a year, and it had never been suggested that anybody was any the worse for taking them. There was one case only, that of a young woman in 1935, who died, it was said, as the result of sepsis of the teeth. Amidopyrine was omitted from the tablets after that date. The medical evidence was conflicting. On the one side Dr. Griffiths attributed death to agranulocytosis caused by the doses of amidopyrine and not to septicæmia. He was convinced that death was not due to septicæmia because bacteriological examination of the patient's blood did not reveal any micro-organism. On the other side Sir William Willcox was equally positive that death must be due to septicæmia caused by the wound in the finger and could not be due to amidopyrine. He had, he said, prescribed the drug thousands of times. He thought it absolutely inconceivable that two doses of 4½ grains of amidopyrine, taken on June 3rd and June 4th, could have caused those dramatically acute symptoms; with this dose taken only two days consecutively, it was impossible that agranulocytosis could have resulted. He ruled out the suggestion of idiosyncrasy. The patient had been taking the drug for years; had there been any special susceptibility, it would have shown itself some time before.

The coroner told the jury that there were three possible verdicts. Death could be found due to septicæmia or to agranulocytosis, or to a toxic condition of which there was insufficient evidence to indicate the cause. The jury returned an open verdict, choosing the third course.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

GROUP HEALTH ASSOCIATION

SEMI-OFFICIAL blessing on health insurance is implied in the announcement that a Group Health Association is being established in Washington D.C., for the employees of two federal agencies—viz., the Home Owners Loan Corporation and the Federal Home Loan Bank Board. Some 2000 employees are said to have enrolled already at a semi-monthly rate of $1.10 per person or $1.65 per family, regardless of the size of the family. A total revenue from subscriptions of $60,000 is anticipated. This is to be supplemented by grants from the federal agencies in the belief that the scheme will promote efficiency and lessen absence on account of sickness.

Subscribers will be entitled to medical care by Dr. William Rolfe Brown, former chief of the tuberculosis division of the Veterans Administration, and a corps of assistants; also to special examinations and to hospital care. For the latter, the association is contracting under the existing Washington hospital insurance plan described in the American Foundation's "American Medicine" as follows:—

"We have now about 27,000 subscribers in the Group Hospitalisation, Inc. in Washington. To take a recent period as an example, the organisation paid the hospitals

from January 1st to June 30th, 1936, over $50,000 for hospitalisation. This would indicate that our plan is certainly of value to the hospitals. We also know now that our average stay in the hospital is about eight days, but the organisation has been able to set up adequate reserves to protect the subscribers for the full period of 21 days if necessary, and even to absorb three or four times the expectancy in case an epidemic or catastrophe or contingency of any sort required it. . . ."

Group health insurance through commercial insurance companies has already been established in this country; for example, the 7000 employees of the firm of McKesson and Robins, drug manufacturers, of Fairfield, Connecticut, are covered by a $12,000,000 group insurance policy that provides life, accident, and sickness benefits to the insured employees. But the foundation of the Group Health Association is, so far as I know, the first venture of government into the field of health insurance in this country.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EXTENDING THE CURRICULUM

IN his address as promoter at a graduation ceremony in the University of Edinburgh last week, Prof. Sydney Smith, dean of the faculty of medicine, referred to proposals for extending the course of study. The curriculum, he said, had been the target for much criticism, but this was to be expected of a course of study that was always advancing. It had been said that the education of medical students was entirely vocational and devoid of cultural value. This was but a phase of the age-long battle between science and the humanities in which the latter, knowing little, feared much; whereas a little understanding would remove all cause for antagonism. It was doubtful if the study of the classics, or of anything else, could do more than foster an appreciation of truth. There could be no doubt that the study of medicine offered as ample a field for thought as any other. The whole of the recent advances in medicine and cognate sciences has had to be incorporated into the curriculum of study without adding to the time taken in the process. Prof. Sydney Smith said that the senatus are now deliberating the advisability of extending the course of study to five full years after the study of the fundamental sciences—that is to say, five years from the beginning of anatomy and physiology. They are also considering the desirability of keeping students at school until they are eighteen years of age. After acquiring the standard of proficiency of the Leaving Certificate, the student would continue at school for a further period of about a year, during which the sciences would be treated as special subjects, associated with one or more subjects of general education. He would then pass to the University, prepared to undertake the study of biology and enter the medical curriculum proper. Among the many other changes under consideration, Prof. Sydney Smith said that they hoped to increase greatly the amount of clinical work, and through the close association with the municipal hospitals arrangements will be made to give all the students a period of living-in at hospital. It is hoped also to extend the dispensary system which is a unique feature of the Edinburgh School. "A considerable amount of money is required to give effect to our programme, but we have every confidence that when our needs are known it will be forthcoming. About half a million pounds would enable us to do all we want to do in the immediate future." The preventive side of medicine had not been neglected either in teaching or in research in the past, but in the future the aim must be more and more to stress its importance.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. E. B. Pollard to *Pembroke* for R.N.B., Chatham; and W. E. Heath to *Victory* for R.N.B., Portsmouth.

Surg. Lt.-Comdrs. C. H. Birt to *Victory* for R.N.B., Portsmouth; and E. E. Malone to *Pembroke* for R.N.B., Chatham.

Surg. Lts. W. S. Miller to *Victory* for R.N.B., Portsmouth; J. F. Meynell to *Peterel*; W. S. Parker to *Penzance*; and W. B. Teasey to *York*.

The following have been appointed Admiralty Surgeons and Agents: Mr. S. M. Lawrence, Buckingham; Mr. F. T. Hill, Caterham; Mr. S. E. Kilner, Bury St. Edmunds; Mr. F. McVean, Castle Cary; Mr. W. T. Briscoe, Chippenham; and Surg. Lt.-Comdr. D. W. Bawtree, R.N.V.R., Tunbridge Wells.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdrs R. B. Roberts to *Resolution*; and J. A. Kerr and J. L. Cox to *Victory*.

Surg. Lt.-Comdr. (D) A. C. Bloomer to *Victory*.

Surg. Lts. R. D. Jenkins to *Drake*; and C. P. Nicholas and J. N. Matthews to *Pembroke*.

Surg. Sub-Lts. J. B. W. Hayward and W. H. Osborne promoted to Surg. Lts.

Proby. Surg. Lt. R. M. Littledale to be Surg. Lt.

ARMY MEDICAL SERVICES

Sir Harold Gillies, C.B.E., F.R.C.S., has been appointed Honorary Consulting Surgeon in Plastic Surgery to the Queen Alexandra Military Hospital, Millbank, London.

ROYAL ARMY MEDICAL CORPS

The name of Maj. H. Alcock has been brought to notice in recognition of distinguished services rendered in Palestine, April–Oct., 1936. (See also under Royal Air Force for further names.)

TERRITORIAL ARMY

Capt. E. G. Oastler to be Maj.

Lts. W. G. Garrow, from 9th Bn. H.L.I., and S. Gifford to be Capts.

To be Lts.: M. S. Holman (late Offr. Cadet, Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.); J. M. Dewar (late Offr. Cadet, St. Andrews Univ. Contgt., Sen. Div., O.T.C.); J MacM. Macfie (late Cadet Corpl., Edinburgh Academy Contgt., Jun. Div., O.T.C.); J. C. Buckley (late Cadet Serjt., Eastbourne Coll. Contgt., Jun. Div., O.T.C.); N. G. Clements; and A. Chambers.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. W. R. Nash, from Active List, to be Capt.

ROYAL AIR FORCE

The names of the following have been brought to notice by the Air Officer formerly Commanding and the General Officer Commanding the British Forces in Palestine and Trans-Jordan in recognition of distinguished services rendered in Palestine, April–Oct., 1936: Group Capt. K. Biggs, M.C.; Squadron Leader (now Wing Comdr.) G. P. O'Connell; Squadron Leader G. E. Church; and Flight Lt. C. A. Rumball.

Squadron Leaders F. D. Barling to No. 3 Flying Training School, Grantham, for duty as Medical Officer; and H. Penman to Princess Mary's R.A.F. Hospital, Halton, for duty as Medical Officer.

Flight Lts. T. D. L. Bolan to R.A.F. Station, Feltwell; J. F. Dales to R.A.F. Station, Finningley; and D. J. Sheehan to Central Medical Establishment, London.

Dental Branch.—Flight Lt. A. Maben to R.A.F. Station, Cardington. Flying Offr. B. Blackburne to No. 1 School of Technical Training (Apprentices), Halton.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. J. Twohill relinquishes his commission on completion of service and is permitted to retain his rank.

AUXILIARY AIR FORCE

Flying Offr. I. A. G. L. Dick is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE

Capt. P. Papatla relinquishes his temp. commn.

Indian Medical Department.—Sub-Maj. and Hon. Lt. Rai Sahib Ram Ditta Mal, Bahadur, O.B.I., to be Hon. Capt.

DEATHS IN THE SERVICES

Lt.-Col. ERNEST GEORGE FRENCH, R.A.M.C., retd., who died on July 25th in his sixty-first year, was educated at Edinburgh and St. Bartholomew's Hospital, London, qualifying M.B. in 1898, M.D. in 1906, and F.R.C.S. Edin. in 1909. Entering the R.A.M.C. in 1901, he served in the South African War, taking part in the action at Rhenoster Kop and gaining the Queen's medal with five clasps. Later, in the European War, he received the King's medal and was twice mentioned in dispatches. He had been chief assistant in the Skin Department at St. Bart.'s, and was put in command of the Military Hospital, Rochester-row, with rank as specialist in dermatology of the British Army. He was the author of a work on the modern treatment of syphilis (1926). He married Adèle M. Carvalho who survives him.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A READER

V

CONTEMPLATION of my steamer's wake across the North Sea has increased my admiration of the superb aeronautics of the gull. I watched several of them riding with outstretched wings on the eddies of air about the stern, and saw one achieve a record of twelve minutes' suspension without a flap of the wings. Like most amateurish bird watchers, I am deplorably sentimental, and a more intimate examination of the birds in a small Swedish archipelago recalled all the unpleasantries of these stinking flesh eaters. The greater black-backed gull is a cunning bully, a sort of Bulldog Drummond of the fiord, with a peculiarly repulsive expression of a young woman who, trying to imitate the patrician hauteur of the ladies drawn in current fashion journals, succeeds only in looking snooty and rapacious. I have just seen a gull as tame as such a bird could be. When barely fully grown, the story goes, it accepted a piece of fish from an old sailor, and every day since for twenty years it has returned to feed from him. It was fat and ugly, and the only signs of attachment it had for its benefactor were to take fish from his hand alone, and to waddle after him pecking viciously at his trouser legs if no food was forthcoming. After feeding, it flew heavily away, with barely enough lift to clear the water. Apart from the constancy of its cupboard love, its chief claim to fame was that many years ago it found a barrel of herrings left open, and put down twenty pounds at a sitting.

* * *

The complacently monolingual Britisher is a bit of myth, but I doubt if he will ever die. There is a similar belief that all Russians are superb linguists. Turgenev attempted to explode it, but it is still invoked with satisfaction when we find that a voluble polyglot is a Russian. Necessity is the only teacher of languages for most of us, and on the whole English people make a fair showing with foreign languages. (Let me hasten to add, throwing a sop to another belief, that they speak them with a vile accent, quite unlike, one must suppose, the exquisitely modulated Oxford accent of the visiting German or Frenchman.) In a Scandinavian country, to whose language necessity hasn't driven me except for a few numerals and food words, I am distressingly dependent on gesture and the superior education of my hosts. But grateful as I feel for the excellent teaching of English in Swedish secondary schools, English with a marked Swedish accent is nearly as incomprehensible as Swedish itself.

In accent lies one of the prime difficulties of a universal language. Whether it is dog Latin, basic English, or Esperanto, it will sound fluid and vowelly on the lips of an Italian, and the Dane, for example, will make it characteristically nasal and staccato. Only by writing the language in the several national phonetics would the spoken word be universal; perhaps it is better to stick to the universal written language, and let speech look after itself. When in doubt we can always translate the peculiarities of the foreigner's Esperanto or basic English. After all, we have the celebrated precedent of Shakespeare's

O weederdee degar lano devar.

with which the *Times* conveyed the niceties of a foreign actress's rendering of

O wither'd is the garland of the war.

* * *

Sweden is said to be the most civilised country in the world. I should hesitate to endorse this remark, for I don't know what civilisation is. For one person, such praise is deserved when he finds electric light in remote villages and sanitation dependent on running water. Reasonable divorce laws, a fair degree of intelligent socialisation, and a proper attitude to the League of Nations might be grounds for another's endorsement. And there is even the unjustly celebrated medical definition of civilisation as syphilisation to consider—but that is more noteworthy as a sniggering near-pun than anything else. But without bothering about definition, I am content to find Sweden exceptionally attractive, full of savoir vivre and modern conveniences.

* * *

As holiday reading the detective story remains the most popular. The bland assumption of reviewers in the higher-toned weeklies that its popularity depends on the vicarious satisfaction of blood-lust is puzzling. I'm certainly not conscious of it, nor are any of the readers I've asked about it; if such subjective observation can be accepted as evidence about a thing like blood-lust. One satisfaction can be found in all stories of detection—that of the scientific instinct. The reader is stimulated to investigate something, and has the vicarious pleasure of tidying up a mysterious phenomenon. The almost constant use of murder as a theme is accidental, for really big thefts, of jewels or war office secrets, can be equally fascinating. The real point about the ubiquity of crime in the stories is that it takes thieves and killers, with their threat to really important things like property and life, to rouse us to the point of intellectual activity. As for blood-lust, it can be so much more easily satisfied every morning for the expenditure of one penny.

Detective story writers are of two kinds: setters and solvers of a puzzle, and novelists who lard more or less good detection with character, irrelevant information, and love interest. It would be interesting to know whether doctors, whose existence is made up of a series of detective problems, like their detection plain or fancy. I should imagine that practitioners like it plain, for they must be tired of adjusting their detection to the all-too-human interests, while medical workers more remote from patients probably like it fancy, for they are sick of mere fact. I manage both kinds, though I prefer the fancy. I like to learn with Miss Sayers the right poets to quote for refined love-making, the right way to refer to that paragon of the peerage, Lord Peter Wimsey; to know that a detailed knowledge of Taylor's Jurisprudence is compatible with a tense Oxonian reverence for Scarlatti and Bach. But these paragons must wear their learning with an air. The angular erudition of Philo Vance is too much for flesh to bear, and even the urbane Ellery Queen goes too far when the editor appends to one of his learned remarks a footnote to the effect that "Queen is evidently referring to Schopenhauer's dictum that . . ." If our policemen are to be learned, let them at least be light.

* * *

Looking over my grains and scruples, I am struck by the way in which they have insensibly piled up until the pages are laden with avoirdupois of portentous solidity. It takes a long familiarity with journalism to believe that a light thought, without cosmic significance or roots deep in experience, is really worth printing. Both I and my predecessors in these columns have yielded to that acquired lust for diagnosis, the desire to explain and relegate all things to a general scheme. The influence of Sir Thomas Browne, with his orotund pontifications, has been too much for us, and though we have'nt attempted a Religio Medici, there is a whiff of incense pervading even our lightest moments.

As a self-designated Reader, my preoccupation in these columns has been with writers; which is no bad thing in itself, for experience is most conveniently handed on in print. But the literary gents have come to regard the art of conveying experience as the most important part of living, and have made Literature synonymous with Life; the writer's life and work are one, and the heritage of Great Thoughts has become the gallery of Great Men. This is all very well for the literary gents, but it can be rather tiresome for the rest of us, because criticism and understanding are expected to be as much concerned with men as with their "message." It is no longer enough for us to read intelligently; we must be erudite as well, with a background of great poets, novelists, and critics; we must be familiar with a host of illustrious persons—believing this with Francis Bacon, and that with Emily Brontë—and live in a select family of what Mr. Aldous Huxley calls culture-uncles and culture-aunts. To be well read is an end in itself, and bookishness has become a game, well seasoned with intellectual snobbery. The proper attitude to it all would be "I don't know about Art and all that, but I know what I like," if this were not the expression of the most intense intellectual snobbery of all, the credo of the Plain Man with No Nonsense about him.

Apparently there is no escape. To be educated one must suffer the taint of Culture. But I must protest against it; and, bookish to the end, I cannot do better than quote culture-uncle Bernard Shaw. It was in Cashel Byron that Lydia Carew, tired of her arty-crafty, overcultured acquaintances, sighed, "If one could only find an educated man who had never read a book, what a delightful companion he would be."

*** *This concludes the five articles by a Reader. Next month F.R.C.S.* (1936) *will be responsible for these columns.*—ED. L.

PANEL AND CONTRACT PRACTICE

A Sunday Sore Throat

ON a certain Sunday, about 10 A.M., a domestic servant told her employer that she had a sore throat and was sent to bed. Some three hours later the employer telephoned to the responsible insurance practitioner asking him to visit the patient. The doctor was somewhat annoyed at being called out on Sunday and suggested that the girl should be sent to him if she required his services. Later in the day he sent notes to the insured person and to the mistress, in the former requesting the maid forthwith to choose another doctor and in the latter making observations about the unreasonable attitude adopted by the mistresses of some domestic servants.

The girl, in her evidence before the medical service subcommittee, when asked whether she felt ill apart from having a sore throat, replied, "No, not exactly ill, but it certainly did make me feel queer." Another practitioner visited her on the Sunday evening and he gave her an injection and some tablets.

The mistress said that she was concerned because the girl was delicate, had recently undergone a nasal operation, and had been advised to exercise care in the event of a cold being contracted. The maid had told her that her temperature, which was usually subnormal, had risen to normal, and the mistress seems to have regarded this as indicating feverishness. She waited until about 1 P.M. before telephoning because she assumed that the doctor would be out during the morning. She said that she told the doctor that the girl had an extremely sore throat and had been sent to bed, and when the doctor inquired as to the girl's temperature she replied that it was normal. The doctor then suggested that the girl should come to his house, but she would not take the responsibility of allowing her to go out as she was thoroughly warm in bed. She agreed that had she not already sent the girl to bed she would have sent her to the doctor. She was not aware that in this particular insurance committee's area it was only in case of emergency that an insurance doctor should be called on a Sunday. The services of the other doctor were not sought until after the notes had been received from the responsible doctor.

The practitioner told the subcommittee that the telephone call came while he was having his lunch. He was informed that the maid had a sore throat, and that her temperature, usually below normal, was that morning right up to normal. He was not informed that the patient had been under a throat and ear specialist, and he did not remember being told that the girl had been in bed since 10 A.M. He thought, in all the circumstances, the patient could come round to him particularly as he knew the employers possessed a motor-car. He told the mistress that a doctor should not be called on a Sunday unless in a case of serious emergency, and had the information given to him suggested the existence of emergency he would have attended immediately; he felt indignant at being asked on a Sunday to visit a patient who had a normal temperature. He telephoned the mistress a few minutes later with the object of reading to her the instructions printed on a medical card, and having understood that another doctor was going to be called in he subse-

quently sent the notes so as to save any further unpleasantness. He was not then aware that if he wished the name of a patient to be removed from his list, it was necessary that he should give notice to the insurance committee.

The subcommittee formed the opinion that the insured person was not seriously ill on the Sunday morning, but it was clear that it was not unreasonable of the mistress, having regard to the circumstances of which she was aware and the further fact that she had sent the patient to bed some three hours previously, to decline to accept the responsibility of sending the girl to the doctor. While the mistress claimed that she had informed the doctor that the girl had been sent to bed, he denied any knowledge of the fact. The subcommittee accepted the evidence of the mistress and thought that the failure of the practitioner to apprehend the fact was due to the manner in which he dealt with the telephone message. The committee found that he committed a breach of the terms of service and called upon him to accept responsibility for the expense necessarily incurred in obtaining the services of another doctor.

An Unfortunate Medical Service Case

The London medical service subcommittee has had so little to do lately that a case referred to in their last report stands out in contrast. A woman, suffering from tuberculosis, discharged herself from hospital just before Christmas so as to be home with her husband and child. Although monthly certificates of incapacity were issued by her insurance practitioner in December and January, he did not see the patient nor provide her with any treatment. Towards the end of February the husband went for another certificate which the practitioner declined to issue without seeing the patient, but although some altercation ensued he did not go to see her. No visit was made until April 6th, and then only after a telephoned request from the insurance committee, which had informed the doctor of the husband's complaint against him on March 20th. To make matters worse, the practitioner, after the complaint had been lodged, gave the woman £2, and there were allegations of other actions on his part apparently taken in the hope of persuading the patient and her husband not to pursue the complaint. The report of the subcommittee had to include a reference to these allegations, but their recommendations, which were adopted by the committee, related only to the breaches of the terms of service which had been established, and were to the effect that the practitioner should be censured severely and that the Minister should be asked to withhold the sum of £25. The subcommittee felt that the other allegations did not fall within their order of reference, but the committee decided to call the attention of the Minister to the allegations made with a view to his taking such action as he might deem necessary.

PUBLIC HEALTH

No Place for an Epileptic Boy

A GOOD deal of publicity has been given to a case that came before one of the London juvenile courts recently. A boy of 12 had been sent home after a considerable stay at a residential school for epileptics. He soon got into trouble with the police. He stayed out late, he stole, he would not go to school. At a remand home his misconduct was attributed to his epilepsy, and return to an epileptic school advised. But no school would take him. The court could not commit him to an "approved school" because the London County Council refused to sanction his committal on the ground that the Home Office, quite rightly in the opinion of the chairman of the court, objected to epileptics associating with normal children in these schools. So the boy was sent back to his parents under the supervision of a probation officer, a form of treatment which the chairman of the court rightly characterised as hopeless, and the parents were told to make the best of a desperate situation.

That something is very wrong here is clear. The residential schools for epileptics were right in refusing to take the boy. It is not fair on the other boys to retain one who leads others astray and undermines the discipline of the school. The regulations of the Board of Education expressly state that children who cannot be educated without serious detriment to others must be excluded. Our information is that schools and colonies for epileptics are being increasingly used as a depository for difficult and delinquent patients who are referred from courts, remand homes, or approved schools. The colonies were never intended for these cases and their presence is often seriously prejudicial to the other patients.

It is to the Home Office that we should look for a remedy. Persistently delinquent children and adolescents are a Home Office responsibility, and it is reasonable to suggest that epileptic delinquents should be admitted to one of the existing approved schools, or, if grave exception is taken to the association of epileptics with others, that a special approved school should be set aside for them.

The epileptic is, too often, an unwanted member of society: the delinquent epileptic is so unwanted that no place can be found for him anywhere. But a place must be found if deplorable incidents like this are to be avoided.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 17TH, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1665; diphtheria, 979; enteric fever, 45; pneumonia (primary or influenzal), 510; puerperal fever, 32; puerperal pyrexia, 132; cerebro-spinal fever, 22; acute poliomyelitis, 8; acute polio-encephalitis, 1; encephalitis lethargica, 2; dysentery, 21; ophthalmia neonatorum, 104. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 23rd was 3093, which included: Scarlet fever, 763; diphtheria, 824; measles, 165; whooping-cough, 500; puerperal fever, 17 mothers (plus 11 babies); encephalitis lethargica, 282; poliomyelitis, 3. At St. Margaret's Hospital there were 25 babies (plus 14 mothers) with ophthalmia neonatorum.

Deaths.—In 124 great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 15 (0) from measles, 3 (1) from scarlet fever, 13 (4) from whooping-cough, 17 (1) from diphtheria, 39 (12) from diarrhœa and enteritis under two years, and 10 (4) from influenza. The figures in parentheses are those for London itself.

There were 3 deaths from measles at Sunderland, 2 each at Newcastle-upon-Tyne, Birmingham, and Nottingham. Birmingham had 5 deaths from diarrhœa and Leeds 4, no other great town more than 2. Portsmouth, Huddersfield, and St. Helens each had one death from enteric fever.

The number of stillbirths notified during the week was 293 (corresponding to a rate of 41 per 1000 total births), including 41 in London.

CORRESPONDENCE

DIABETIC KETOSIS AND SUCCINIC ACID

To the Editor of THE LANCET

SIR,—Your leading article last week (p. 200) has brought into prominence a new treatment with succinic acid suggested by Prof. Szent-Györgyi for diabetic ketosis. His claims are of far-reaching importance to thousands of diabetics and suggest that insulin injections may be replaced by succinic (amber) acid by mouth. Before the publication of his scientific paper in July, the British lay press had already mentioned the new treatment and I have been pestered by patients wanting to try it and give up insulin. Admittedly the diabetic case records of the trials made by his clinical colleague, Dr. Korányi, read convincingly and I feel that your leading article will raise, among doctors and their patients in this country, hopes which I think are premature. I have obtained with my colleagues such *entirely negative* results in two cases that I am publishing them at once and they are now in the press. Our trial was undertaken in June at the request of Prof. Szent-Györgyi through the Medical Research Council and the results may be summarised as follows.

Two middle-aged diabetic women were admitted to King's College Hospital, put to bed and kept throughout the experiment on a constant diet of 100 g. C, 75 g. P, 150 g. fat. Previous diet treatment had failed to control their diabetes and a heavy ketonuria, as well as hyperglycæmia and glycosuria, were constantly present. After three days to ensure metabolic stability, succinic acid was given in the largest suggested doses, 10 grammes per mouth, for a week, which is longer than Dr. Korányi found necessary to abolish ketosis in his four cases. During that week the ketosis became *progressively worse* in both cases but quickly disappeared with subsequent insulin treatment. My colleagues and I were convinced that our trial was fair and our results definite and so far we have undertaken no more cases.

Now *four* successful cases from one clinic and *two* failures from another *prove* nothing, both publications being in my opinion premature. But our failures show clearly that it is too soon to advise the treatment of severe diabetic ketosis with succinic acid alone, for without insulin our cases would have drifted into coma. It may be that succinic acid acts in some cases only, whereas insulin acts in all. Until more numerous investigations have been made, I should like to warn your readers and their patients against undue optimism.

I am, Sir, yours faithfully,

R. D. LAWRENCE.

The Diabetic Clinic, King's College Hospital, July 26th.

LONDON FEVER HOSPITAL

To the Editor of THE LANCET

SIR,—Medical practitioners who know and use the London Fever Hospital will welcome a recent decision of the committee of management to extend the isolation accommodation. A contract has been signed for the erection of a new three-storied building providing single rooms on two floors, with an operating theatre, and small wards for children above. The architects are Sir Aston Webb and Son, and the design carries out in their entirety the recommendations of the medical committee. There are balconies to all floors, running completely round the building, and all nursing and service will be from the open air without internal corridors of any sort. An appeal will be launched in the autumn and we shall be grateful for all the help we can get. We hope, too, that all who are interested will see the new building in due course, and in the meantime we commend the service of this hospital to our colleagues in the Greater London area. Private rooms are available for paying patients, and a high standard of nursing and maintenance can be relied upon.

This was the first and it remains the only voluntary fever hospital. Its growth and endurance through 135 years of service and its importance in medical history give the hospital an honoured place in the voluntary system.

We are, Sir, yours faithfully,

CHARLES R. BOX, C. W. GORDON BRYAN,
JOHN F. H. BROADBENT, D. F. A. NEILSON,
WILLIAM H. WILLCOX, THOMAS HUNT,
C. E. LAKIN, K. SHIRLEY SMITH.

July 21st.

PROPHYLACTIC TREATMENT IN OBSTETRICS BY MEANS OF PRONTOSIL AND SULPHANILAMIDE

To the Editor of THE LANCET

SIR,—In your issue of July 10th you publish an abstract of a paper communicated to the North of England Obstetrical and Gynæcological Society by Mr. Bryan Williams on the administration of *p*-aminobenzenesulphonamide (sulphanilamide) to a group of "obstetrical interference" cases in the hope of avoiding septic infection. From reports that have reached me from several other sources I gather that a similar preventive policy is being adopted rather commonly both in private and hospital practice.

Since the paper published in THE LANCET of Dec. 5th, 1936, by myself with Dr. Méave Kenny and the honorary staff of Queen Charlotte's is perhaps partly responsible for this new departure—and since there would seem to be some misunderstanding about it—may I offer the following observations and suggestions?

The experiments with mice which led me to hope that these drugs might have some prophylactic value were briefly as follows:—

The drug was given by stomach-tube 4 to 6 hours before the infecting dose of hæmolytic streptococci was injected into the peritoneal cavity, and was repeated a few hours after that event, and subsequently once daily for two or three days. All the 24 animals treated with sulphanilamide remained well; of the 6 treated with red prontosil 2 died late (8–10 days), and the others remained well; while of the 15 treated with Proseptasine (Messrs. May and Baker) 11 remained well and 4 died between the 7th and 13th days. All the 11 control mice died within 48 hours.

Other tests of this kind, in which the spacing of the drug doses was rather different, showed that in order to protect the animals it was essential for an effective dose of the drug to have been given *within a few hours* (not more than six) before the animals were infected—and for a series of doses to follow that event.

These conditions might well be fulfilled in obstetrics, since the probable time of infection—during or shortly after labour—is known. It therefore seemed to me reasonable—if prophylaxis in obstetrics is to be attempted—to start it some hours before the probable time of delivery—repeat the dose at 6 hourly intervals until the placenta is expelled, and thereafter at 8 or

12 hourly intervals for 3 or 4 days. (There is no indication from our animal experiments that a course of treatment *before labour starts* would increase the margin of safety: the important thing is that a dose shall be given if possible within a few hours before, and certainly within a few hours after, the probable time of infection.)

This plan is admittedly based only on hope. We can certainly prevent infection in mice so treated, but it does not necessarily follow that we shall succeed with man—and it may prove an exceedingly difficult matter to decide this point. I referred to the "effective dose" for mice. That was, in the case of sulphanilamide, about 5 mg. for a 20-gramme mouse, repeated a number of times. A comparable dose in relation to body-weight for an adult woman weighing, say, 60 kilogrammes would be about 15 grammes—a formidable amount to give to a woman whose metabolism is already bearing the strain of a full-term pregnancy.

But happily there is good reason to doubt whether the ratio between effective dose and body-weight is the same for mouse and man. Our experience of these drugs in the treatment of established infections strongly suggests that the effective dose for man in relation to body-weight is considerably smaller than for the infected mouse. Certainly one can augment the streptococcus-killing power of the mother's blood quite handsomely by 1-gramme doses of sulphanilamide t.d.s. (and sometimes by half that amount), as has been shown repeatedly by my colleague, Dr. E. D. Hoare, in this laboratory in tests carried out on normal parturient women. During three days of treatment by this drug a small drop of blood (0·15 c.cm.) was usually able to destroy completely several thousands of virulent hæmolytic streptococci, whereas before the drug was given it failed to kill the smallest test dose (10 to 40) of the same cocci.

These observations, together with the mouse protection tests described above, afford definite ground for hoping that we may—in many cases at least—be able to head off an infection by the hæmolytic streptococcus if that microbe should happen to reach the birth canal during or after labour. (An observation recorded in Dr. Kenny's paper in your issue of July 17th gives warning, however, that such prophylaxis may sometimes fail.)

In what circumstances should it be attempted? The answer to that question demands some previous consideration of possible risks for the mother and the child. While it is now clear that sulphanilamide and prontosil are, on the whole, of very low toxicity for most human beings, it certainly cannot be said that their use is completely free from undesirable effects or even danger. In particular it is now manifest that they exert an undesirable effect in many people upon the all-important oxygen-carrying capacity of the blood, an effect which may perhaps be increased by an anæsthetic causing cyanosis, such as nitrous oxide. Moreover, it is not unlikely that certain individuals have an idiosyncratic susceptibility to the toxic action of these compounds. In a few instances they have even been credited with a fatal effect.[1]

I am far from wishing to overweight these considerations or to deter medical men from employing this new weapon in appropriate circumstances, but I feel that many will share my regret that it should be used indiscriminately for preventive purposes without any realisation of possible harmful effects (and also, be it said, for curative purposes in infections which we have no reason to expect will be influenced by it). Surely the statement that this or that remedy "can at any rate do no harm" is unworthy of twentieth century medicine—and yet—how much of our practice has no better basis.

As I understand it either red prontosil or sulphanilamide is now being used prophylactically in the following circumstances:—

(*a*) For quite normal childbirth—because the doctor or the patient, or both, realise that there is a certain small risk of sepsis in every confinement.

(*b*) For deliveries involving "interference"—i.e., operative delivery, internal version, manual removal of placenta, &c.—because the risk of sepsis is known to be greater in such cases.

(*c*) For childbirth associated with suspected or known risk of *infection by the hæmolytic streptococcus*.

It seems to me that in the present state of our knowledge (and ignorance) such prophylactic treatment in class (*a*) is hardly justifiable. The risk of sepsis due to the hæmolytic streptococcus (the only kind which we have any reason to expect may be controlled by these drugs) is small, varying from 1 in 2000 to 1 in 50 according to the circumstances of the confinement; on the other hand the risk of toxic effects of the drugs, even in non-pregnant adults, is quite appreciable and may prove to be more serious as our experience increases; and there is perhaps the further risk that reliance upon some prophylactic charm of this sort might bring in its train a relaxation of vigilance in the application of aseptic and antiseptic technique. That might well prove disastrous in the long run.

Prophylactic treatment in class (*b*)—the interference cases—is perhaps more justifiable if there is any evidence that the incidence of *hæmolytic streptococcus infection* in such cases is greater than among normal deliveries. I do not know of any such evidence—and it has been pointed out to me by obstetricians that because a strict aseptic and antiseptic toilet is more likely to be rigidly adhered to in conducting difficult deliveries of this kind they are somewhat less likely than normal cases to acquire a hæmolytic streptococcus infection.

I would suggest that if prevention by drugs is attempted in such "interference cases" it would be well to ascertain whether or no a hæmolytic streptococcus is present in the birth canal after labour, and if it is not, to discontinue the drug as soon as possible. For this purpose a swab taken 6 to 12 hours after the expulsion of the placenta should be bacteriologically examined. It will nearly always be possible to say if this is completely negative after 20 hours' incubation.

There remain the cases (class (*c*)) in which there is a known or suspected risk of infection by hæmolytic streptococci. For these I feel there is a very strong case for attempting prophylaxis and I, personally, should reserve it for such cases at present. May I quote a few examples of the cases I have in mind?

(1) In a maternity hospital two or three women recently confined develop a high temperature within a few days. Other women recently delivered, and especially those still awaiting delivery, should be at once treated by one-gramme doses of sulphanilamide t.d.s. pending the report of the bacteriologist on the swabs of the febrile cases.

[1] Since the above was written I have received a personal communication from Dr. Perrin Long of the Johns Hopkins Hospital, Baltimore, telling me of several cases in which an "acute hæmolytic anæmia" developed within a few days of the commencement of treatment by sulphanilamide; and of two cases of agranulocytic angina associated with its prolonged administration (three weeks). These observations, with the records of two cases of agranulocytosis recently reported in English journals (*Lancet*, 1937, **1**, 1519; and *Brit. med. J.* 1937, **2**, 105) may well serve to emphasise my warning.

(A case has recently come to my notice in which this plan was adopted but a woman developed a hæmolytic streptococcus infection on the 13th day—i.e., 10 days after stopping the drug. That, I suspect, will happen only very rarely, and I hardly think it constitutes a sufficient reason for prolonging the prophylactic treatment *as a rule* beyond the fourth day.)

(2) A woman at full term is found to have erysipelas of the foot, or an "angry" septic wound, or tonsillitis. If she is not already receiving one of these drugs for the cure of these conditions it should be given immediately labour starts—and in this case continued beyond the fourth day.

(3) A doctor is called to a woman in labour and finds a child in the house with a discharging ear, or hears that another child has recently been sent to hospital with scarlet fever, or that the husband has had a "sore-throat." Suspecting that such infections were due to hæmolytic streptococci and that the dust in the mother's room must be infected, treatment with sulphanilamide should be instituted at once.

Finally may I urge that it is of very great importance for the future of obstetrics, and also of medicine and surgery, that we should try to arrive at some estimate of what can be achieved by prophylaxis along these lines. It will be very difficult to obtain statistically valuable data from the treatment of individual cases or small groups, but some indication of probable success, or of certain failure, may be obtained if careful records are kept by medical officers who employ such methods for the control of outbreaks of puerperal sepsis in maternity institutions. (It is of course essential that such outbreaks should have been bacteriologically investigated.) I shall be very glad to file any such records as a basis for publication in due course when a sufficient number has accumulated.

I am, Sir, yours faithfully,

LEONARD COLEBROOK.

Bernhard Baron Memorial Research Laboratories,
Queen Charlotte's Hospital, July 23rd.

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—I am sorry Dr. Kitchin is so confused about the meaning of "psychotherapy," even if she has not given much consideration to the matter. It is a medical term meaning treatment by psychical means, just as hydrotherapy implies treatment by water. It does *not* mean a "cure of souls" since it can be extended to organic disease (as in the removal of warts by suggestion!) The word for the ministration of the priest is not and never has been psychotherapy but "spiritual or religious consolation." Now if the Guild were to call itself the "Guild of Religious Consolation" no one would object to it, but psychotherapy implies treatment and treatment of the sick. Long ago it was decided that the most suitable persons to treat the sick, whether neurotic or not, were the properly qualified physicians and surgeons and not those good-intentioned, but ignorant, possessors of "a gift for healing."

I must say that Dr. Kitchin's views stagger me. She wishes, although protesting otherwise, to transfer the whole treatment of functional nervous disease from the medical profession into the hands of the clergy (who already complain of being overworked). One might, with as much justification, hand over the treatment of genito-urinary complaints to the plumbers.

Psychotherapy was first investigated scientifically by the medical profession and any advances which have been achieved have been produced by physicians. Suggestion was investigated by Mesmer, Elliotson, Esdaile, Braid, Charcot, Liébeault, Janet, Prince, and Dejerine. Analysis, invented by Freud, was investigated by Adler and Jung (whose contributions to clinical psychotherapy, by the way, are negligible), Stekel, Ross, and others. All except Janet (a teacher of philosophy) were physicians. Can Dr. Kitchin point to a single advance made by a priest? Is it unreasonable therefore to suggest that those who discovered and advanced a treatment will be more likely to use it properly and advance it further than those who in the past have discouraged it?

In the report issued by the Lambeth Conference on psychotherapy in 1920 it states clearly that "our committee has so far found no evidence of any cases of healing which cannot be paralleled by similar cures wrought by psychotherapy without religion, and by instances of spontaneous healing which often occur even in the gravest cases in ordinary medical practice." Moreover, in those clinics which practise strict psychoanalysis (i.e., without the use of religion) the statistical results are better, although the treatment is rather longer, than in those clinics in which treatment is not technically so strict (i.e., in which religion may be included). If we compare this with physical medicine (say auricular fibrillation) and find that the use of a medicine (digitalis) has the same action with or without religion we adopt the scientific attitude and remove the superfluity. In a criticism of C. G. Jung in my book "Modern Discoveries in Medical Psychology" (Macmillan 1937) I stated that "religion has as much (and no more) connexion with the treatment of the neuroses as it has with the treatment of pneumonia" and I still maintain that belief.

I agree with Dr. Dillon "that firm adherence to scientific principles was never more necessary than it is in psychotherapy to-day," but shall we get it by handing psychotherapy to the clergy? Those who heal by religion do so by suggestion but utilitise it without any attempt to study it or even understand its nature—i.e., empirically.

I deplore the tone of Dr. Kitchin's letter, which reminds me of the letters which used to appear in the lay press advocating osteopathy and abusing the medical profession. I am sorry Dr. Kitchin finds her colleagues "by temperament and training quite unfitted" to treat the neuroses. My experience is the opposite. I have found the general practitioner patient and understanding with neurotics, and generous in sending them to the specialist if his own efforts have failed. On the other hand, the specialist in this work usually does a large amount of honorary work (I have done between ten and twenty hours per week for the last seven years) in hospitals and is always willing to see privately the middle-class patient at what are really uneconomic fees. I agree that there is a shortage of psychotherapists in the suburbs and provinces but that is due to the sluggishness of the hospital committees in instituting psychotherapeutic departments in the hospitals concerned. This is slowly being corrected as their worth is being recognised. There are ample facilities for the training of qualified medical men (as the Guild admits in its pamphlet) in the teaching hospitals and institutes for psychotherapy.

A great deal of fog has been raised to obscure the intention of the Guild, but the issue is really quite simple. A man is either ill or well. If he is ill the proper person to treat him is the doctor. If he is well he needs no treatment (can Dr. Kitchin deny that?).

The pamphlet issued by the Guild says: "The doctor is often proving himself competent to help where the priest is at loss: and no constructive steps

have yet been taken by the churches to equip certain of their ministers and responsible laymen with the requisite training for this work." Can Dr. Kitchin or the Guild deny that this shows a desire to encroach on medicine and does it not encourage not only the clergy but also laymen in religion?

Those who encourage the unqualified practitioner betray their patients into grave danger and not only their patients but their colleagues and that host of physicians whose labour and sacrifice have given us our heritage of medicine. The great weight of medical opinion is against the establishment of unqualified practice whatever the motives and however disguised the intrusion. I repeat my original assertion that those who value their reputations and their colleagues' opinion will refrain from supporting the Guild of Pastoral Psychotherapy or any similar association which fosters unqualified practice.

I am, Sir, yours faithfully,

Harley-street, W., July 24th. CLIFFORD ALLEN.

To the Editor of THE LANCET

SIR,—Dr. Clifford Allen's letter in your issue of July 17th has just been brought to my notice. As the person responsible for sending to Dr. Allen the memorandum of which he complains, may I be permitted to make some reply to his remarks?

It is singularly unfortunate, I think, that while he claims for the qualified physician a point of view "detached, unemotional, and scientific," Dr. Allen betrays none of these qualities in his letter to you. He bases his arguments upon a series of dangerously unscientific generalisations, so obvious that I need not point them out, and he fails to make any comment upon the one issue which is really raised both by his letter and the memorandum which prompted it.

This issue is a fundamentally important one which deserves, both from the clergy and the medical profession, more serious examination than it appears yet to have been given. Neither in religious nor scientific circles is it any longer possible, I believe, to describe human personality as a tripartite entity, "body, mind, and spirit." We think of it nowadays as a psycho-physical unity. Whatever its ultimate nature may be, whether "spiritual" or "material," it is describable only in terms of function as "body-mind" or "mind-body." This definition is generally accepted; I need not, therefore, defend it. But mark its corollary: *all disorders of personality, including those hitherto described as "spiritual," are manifested either mentally or physically, or both.* Thus there is no longer any way of distinguishing a category of human distresses or maladjustments which is "spiritual" but not "psychological"; and there is no sort of physical disorder without some psychological concomitant or effect.

Now, Dr. Allen affirms roundly that psychotherapy is a branch of medicine, and Lord Horder has said that he does not agree with the clergy practising psychotherapy. But, by the accepted definition, this word "psychotherapy" must include every sort of ministry it is possible to afford to the "soul," "spirit," or "mind" of man, the spiritual consolations of religion not excepted—so that by one handsome and inclusive gesture both Lord Horder and your correspondent make the medical profession exclusively responsible for the whole spiritual, moral, and mental direction of the human race, in its every trial, difficulty, and vicissitude from the cradle to the grave.

I doubt whether the majority of your professional readers would care to assume this responsibility, even if it could be shown that a medical training is an adequate equipment for it. However difficult it may be in theory to distinguish the psychic from the physical aspects of human personality, I believe that most medical men would agree that for practical purposes it is useful to draw the line somewhere and allow that, in an imperfect world, there is a province for the "cure of souls"; a point at which it may be accepted that the physician's responsibility for his patient's "spiritual" welfare ceases.

If so much be granted, the question then arises, since every activity of the priest, minister, or spiritual director is necessarily psychotherapeutic in its purpose—whether it take the form of a sermon or a vestry consultation—is there any particularly scientific reason for saying in effect, "I have no objection to a man doing this work in ignorance, but do resent as an encroachment upon the province of medicine any attempt to do it with knowledge and skill"?

As this matter appears to me at the moment—and I welcome correction—there are only two alternatives. Either the medical profession must avow that the whole ministry of religion is unnecessary and redundant in the life of the modern world, or the situation must be accepted that the whole work of the church is essentially psychotherapeutic, since "They that are whole have no need of a physician." Acceptance of the latter alternative implies that it is not merely the right but the first duty and responsibility of the clergyman to equip himself with the scientific knowledge that will help him to be as competent in his sphere of labour as the doctor is in his. If the result of that training is only to enable him to recognise his own limitations, surely it is sufficiently warranted?

The Guild of Pastoral Psychotherapy is being formed not to "train the clergy to perform a branch of medicine" but to enable the minister of religion to fulfil his part in a ministry of healing which, as I see it, involves and for some time to come must continue to involve the intimate coöperation of religion and medicine. Until we know with finality whether human personality is essentially a material organism functioning "psychically" or a spiritual organism functioning physically, I do not see how the necessity for such coöperation is to be avoided, or how either doctor or priest can desire to assert exclusive responsibility for the whole mysterious entity to which each at present ministers in part.

But until a claim of that sort can with justice be made, is it not merely juggling with words to describe "pastoral psychotherapy" as a branch of medicine?

I am, Sir, yours faithfully,

A. B. W. FLETCHER,
Hon. Sec., Guild of Pastoral Psychotherapy.

Dorset-square, London, N.W., July 27th.

THE OVER-TREATMENT OF GONORRHŒA

To the Editor of THE LANCET

SIR,—Mr. Nicholls has raised certain very important points in his letters of March 20th and July 24th. If I interpret him correctly he believes that the methods at present employed for the treatment of gonorrhœa are opposed to fundamental principles, and he also suggests that these methods, unsound as they are, are frequently misapplied by clinic medical officers. I have contended and still contend that in the second matter he has found the wrong scapegoat. With this statement that "the present methods of treating gonorrhœa in the male are fundamentally wrong and quite unlike any other established surgical procedure" I am in entire

agreement, and I would extend this opinion to the treatment of gonorrhœa in the female. This was my impression after I became an assistant in a gonorrhœa department, then in the hands of genito-urinary surgeons, and the experience of some years has served to establish this as a firm conviction. I see far too many patients with gonorrhœa whom over-treatment, or under-treatment, or any treatment, will not enable to pass the tests of cure which I believe to be essential. The question is what is to be done about it.

If one seeks a parallel in other fields of medicine there is the problem of the treatment of cancer, which is a far less common disease than gonorrhœa with a smaller sum-total of harmful effect upon the community. The remedy is being sought in a campaign of intensive research backed by the whole-hearted interest of the medical profession and the lay public, and with almost unlimited financial support. For the study of gonorrhœa not one of these advantages is available.

Research in gonorrhœa in this country is almost negligible, and is for the most part limited to the spare time of clinic medical officers, most of whom are already overburdened by routine work. The story is one of lamentable neglect. During the past five or six years, for instance, remarkable results have been reported in the United States, and elsewhere, from the treatment of gonorrhœa by fever induced by physical methods. So far as I am aware, no attempt has been made to introduce this method for the treatment of gonorrhœa in this country. The treatment is rational and effective, but requires specially trained personnel and therefore costs money. The medical profession must be well aware of the vast total of mental and bodily ill-health for which gonorrhœa is responsible, yet this disease is considered unworthy of financial support for the purpose of improving methods of treatment.

Mr. Nicholls's interest in the subject does him credit, and if he will cease to attack the much-abused venereal diseases officer and direct attention to the apathy and unreasoning prejudice of colleagues, his efforts may not be in vain.

I am, Sir, yours faithfully,

AMBROSE J. KING.

Harley-street, W., July 26th.

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—May I be allowed to correct Sir E. Graham-Little's misconception of my letter dealing with the relationship between the General Medical Council and medical schools?

I thought everybody appreciated the fact that the General Medical Council resolutions laid down the *minimum* standard for the medical curriculum and that medical schools are in no way prohibited from exceeding this minimum standard. Perhaps I ought to point out too that "standard" and "length" of curriculum are not necessarily synonymous. There was no suggestion in my letter of "complete independence" of medical schools so far as curriculum is concerned.

With regard to the restriction of opportunity for medical study to the relatively well-to-do being *confirmed* by the evidence of figures contributed by the University Grants Committee quoted in your issue of July 10th, I think I would hesitate to use the word "confirmed"; there are medical schools in these islands outside London.

If, as Sir Ernest states, "the new curriculum intensifies the evil of overloading," it will only do so as a result of the dangers of too literal interpretation and misplaced zeal on which I commented in the third paragraph of my letter in your issue of July 3rd and not from any fault or design of the General Medical Council.—I am, Sir, yours faithfully,

G. A. CLARK.

Faculty of Medicine, The University, Sheffield, July 23rd.

THE RED CROSS IN SPAIN

To the Editor of THE LANCET

SIR,—In your issue of July 10th, under the heading of Parliamentary Intelligence: Air Ambulances in Spain, is a statement which I think is likely to give a wrong impression—viz., that our Red Cross organisation is doing nothing in Spain.

Immediately after the outbreak of the Spanish civil war the International Red Cross Committee in Geneva made its customary offer of assistance to both belligerents. This was accepted, and the committee proceeded to give such help as was possible impartially to both sides. The committee, also, following its usual practice, appealed to the national Red Cross Societies for their support.

The British Red Cross Society, after careful consideration, decided to work in Spain through and with the International Committee for two reasons. First, because this method of procedure precluded any possible accusation of partiality to one side or the other, and second, because it enabled a much more economical and effective use to be made of the money, and stores, &c., contributed by the British public in response to the appeal of the British Red Cross Society. With the money received from the British and other national Red Cross Societies the International Committee was able to appoint representatives in the towns and places where the distress among the civilian population was greatest and thus to make the fullest possible use of the resources placed at its disposal.

The response made to the appeal of the British Red Cross Society was not large, and the cost of dispatching and maintaining its own representatives and missions to Spain would have swallowed up most if not all of the money, leaving little available for the actual succour of distress in that country. Moreover, the Society would inevitably have been charged with partiality—probably by both sides.

That more and ever more help is needed for the relief of the civilian population who are suffering so terribly in Spain is only too sadly apparent from the accounts of the horrors which fill the columns of the daily press. Every penny that we receive is sent at once to Geneva, or is expended in the purchase of stores or equipment of which the International Committee tell us there is urgent need.

May I, therefore, renew the appeal of the Red Cross? No words of mine can add to the sadness of Spain's distress and the urgency of her need of all the help that we can give her.

I am, Sir, yours faithfully,

EDWARD STEWART, M.D., M.R.C.P.,
Deputy Chairman, Executive Committee, British Red Cross Society.

14, Grosvenor-crescent, S.W., July 27th.

NOISE

To the Editor of THE LANCET

SIR,—With reference to Sir Nairne Sandeman's letter in your issue of July 17th, may I point out that he refers to an aspect of the noise problem which has for some time been receiving the most careful con-

sideration of the Anti-Noise League, and we are particularly studying the question of the sound-proofing of hospitals and nursing-homes to prevent not only external but internal noises disturbing patients. An article on the subject will be seen in the July issue of our magazine, *Quiet*, and our technical committee have published a pamphlet on it. As regards noisy motor-cars, the law already provides for inadequate silencing and for unnecessarily noisy driving, but I am afraid that the enforcement of these laws by the police still leaves much to be desired.

I am, Sir, yours faithfully,

C. H. ROBINSON,
Secretary of the Anti-Noise League.

66, Victoria-street, London, S.W.1, July 22nd.

AN ALL-INDIA LEAGUE OF HEALTH

To the Editor of THE LANCET

SIR,—I saw in your issue of July 10th (p. 114) a project for establishing an All-India League of Health and Lord Horder's suggestion to make the people of India "health-conscious." I am not sure about the health-unconsciousness of the Indians; but I note that the High Commissioner for India spoke of the poverty of the people as the great obstacle to health work. My own opinion is that it is not the poverty but the lack of fellowship with poor people that is responsible. India has reached the stage when she might hold her own with this country on questions of health, but it must be through direct contact with poor people; and it is the licentiate class of the medical profession in India, who form the vast majority of the medical profession, that have this contact and can contribute most to medical progress through their service and sacrifice. In the scheme of such a League of Health are these licentiates to share and share alike or are they to be excluded as untouchables? As a past-president of the Bombay branch of the All-India Medical Licentiates' Association, I would ask if the time has not come to include licentiates in the Medical Register of the United Kingdom. Their inclusion would give them the chance of becoming a recognised and useful body and thus add to the hope of New India.

I am, Sir, yours faithfully,

London, S.W., July 23rd. F. TARAPORVALA.

LONDON CORONERS' QUALIFICATIONS

To the Editor of THE LANCET

SIR,—In a recent public notice inviting applications for the position of coroner for the County of London, which is the second relating to this office, it is significant that the terms of the advertisement differ appreciably from those of the first. Of material interest to the medical faculty is the point that stress is laid on legal rather than on scientific qualifications. This would suggest unjust discrimination. The stipulation that solicitors or barristers who are candidates must possess "one of the qualifications required by Section 1 of the 'Coroners (Amendment) Act, 1926'" is redundant and tending to obscure the conditions prescribed by the Act. There is no other qualification required, except that of five years' standing in his profession, which affects the medical practitioner. The Act clearly indicates the intention of its framers. It is illegal to disallow the candidature of any person that Section 1 enumerates as being competent to occupy this ancient office. It is inconsistent with the terms of the advertisement to state that "due weight" will be given to a knowledge of forensic medicine, for only a doctor can have this knowledge which is peculiar to medical education. It is entirely outside the scope of a lawyer's attainments, however otherwise distinguished. While the authorities concerned may desire qualifications additional to those explicitly stipulated by the Act, they may not exclude, even by implication, those whom the Act describes as eligible. It is unfortunate that emphasis is laid so often on the special claim of the former "deputy" to consideration. The deputy is the nominee of an existing coroner and apart from some "experience" may possess but the scantiest qualifications. This system is undemocratic and tends to perpetuate a monopoly of "vested interests."

I am, Sir, yours faithfully.

July 24th. SEDULIUS.

THE LANCET 100 YEARS AGO

July 29th, 1837, *p.* 669.

From a leading article.

Priority! What a magic word;—as dear to the *soi-disant* discoverer, as is honour to the maiden, glory to the soldier, or freedom to the patriot's heart. A celebrated historian has remarked, that of all civil commotions, the most sanguinary and inveterate are those which arise in consequence of religious dissensions. Even thus is it with the feuds of "discoverers." *Si parvis componere magna.* Priority is a hidden treasure, suddenly brought to light, upon which every adventurer falls, each determined to carry off, at least a portion of, the booty, if he fail to appropriate the whole. Hence, the moment that a new fact is announced,—a fresh discovery in medical science is proclaimed, and a troop of foragers are on the *qui vive*, like passengers in a street, when the cry of "pick-pocket!" "stop-thief!" is raised. The more prudent consult their memories, or their note-books, and there find record, at all events of "the germ" of the alleged discovery, while some literary jackall discharges from the venthole of his empty noddle the only idea that was ever contained in that cavity and, with a pertinacity which is peculiar to his class, insists on its identity with the fact announced, declaring that it was familiar to him from his childhood, or handed down to him, perhaps, from a long line of illustrious ancestors. The quarrel once seriously aroused, the partizans of each claimant forthwith rally round their principal, and the battle becomes general. Hard words are interchanged, and men who have hitherto been as "honourable" as BRUTUS, suddenly find themselves arraigned as thieves. The learned are convicted of profound ignorance; men of veracity are shewn to be false witnesses; social order is sacrificed to personal vanity; and friendship changes into hatred, and esteem into contempt.

LINCOLN COUNTY HOSPITAL.—Contributions for the new buildings at this hospital now amount to £53,897 and its overdraft has been reduced to £2500. The new block is to include an operating-theatre. The hospital possesses a sufficient supply of radium and it is desired to have a radium centre at the north and south of the county as well as in the middle. It is also hoped to develop the work on fractures, though it will not be possible at present to have a special wing for these cases. There is a waiting-list of about 300.

SHEFFIELD HOSPITAL CONTRIBUTORY SCHEME.—Sheffield, which is the pioneer of the scheme for the deduction of a penny-in-the-pound from the weekly wages of steelwork operatives, has inaugurated an extended plan to cover black-coated workers who find the cost of nursing-homes prohibitive. There is no income limit. The voluntary hospitals in Sheffield receive £120,000 a year from the scheme, and benefits to contributors include financial help towards the cost of operations, nursing-home, or pay-ward fees. Grants are also made towards other expenses incurred by illness.

PARLIAMENTARY INTELLIGENCE

NEW MILK REGULATIONS

On July 23rd in the House of Commons Mr. W. S. MORRISON, the Minister of Agriculture, submitted for approval the amendments of the Milk Marketing Scheme 1933. He said that these were to ensure more efficient and better operation. The producers of tuberculin-tested milk were brought into the scheme for the first time, and the object was to secure that this high quality milk should be marketed through the national organisation under conditions which would encourage its continued production. The Milk Board had also come to the conclusion that under the present arrangement producer-retailers, who were mostly small men, were being asked to make a contribution that was excessive, and they therefore proposed an amendment which would result in smaller contributions being paid by producer-retailers, according to the quality of milk they sold. For accredited producers the contribution would be reduced to ¾*d.*, and for tuberculin-tested milk to ½*d.*

Mr. ALEXANDER said he thought that if they wanted to increase the consumption of milk it was a sine qua non that it should be fit at all times for human consumption, and a producer who had been found guilty of wilfully adulterating milk should be prevented from selling milk until he could provide evidence that it was suitable—even to the cancellation of contracts. For sometime past bodies like the Food Council, the Consumers Committee, and the Cutforth Commission had made references, not always favourable, to the possibility of delivering milk to be sold at differential prices without the process services of pasteurisation and bottling, the general argument being that they could reduce the price of milk if they asked the consumer to pay only for the type of service rendered. He felt that behind that lay the much more important consideration of public health. The Ministry of Health were now actively considering what their attitude should be regarding pasteurised milk. He would remind the House of the epidemic last year at Bournemouth, where over 50 deaths and over 500 cases were directly traced to the supply of milk from one producer selling milk loose and raw.—Mr. MACQUISTEN: "You mean fresh milk, not raw."—Mr. ALEXANDER said he was prepared to take the correction; what he wished to impress upon the House was that 50 people died. People who argued as between pasteurisation and fresh milk must have regard to the health of the community. At this moment two important municipal corporations, Poole and Glasgow, had Bills before the House containing a clause giving compulsory pasteurisation powers. The Ministry of Health had deferred the matter and were looking into it. The Government had also asked all local authorities who supplied milk to school-children that as far as possible they should supply pasteurised milk. The reduction of the producer-retailer's contribution would place him in a very favourable position in relation to the vast majority of the trade who had for years laid down expensive capital plants for the pasteurisation and bottling of milk in the interests of public health. Instead of assisting the consumption of fresh milk so vital to the health of the nation there was a possibility of a reduction of the amount supplied for human consumption. That was a point which had not been fully considered.

Mr. MACQUISTEN said fresh milk was the only milk which was worth drinking. The one really bright spot in what the Minister had said was the statement that he was going to reduce the levy on the T.T. producer to ½*d.* a gallon. It would be far better to take steps to keep down the rabbit pest which had a lot to do with the spread of bovine tuberculosis. The retail price of milk in Scotland was now 2*s.* 4*d.* a gallon. It was no use talking about nutrition and malnutrition as long as that was the Milk Board's price and as long as a man who sold his milk cheap because he could produce it cheaper was treated as a felon.

Mr. W. S. MORRISON, replying to the debate, said the crime of adulteration carried its own penalty, and he did not think the cases of it were numerous enough to warrant any real objection to these amendments of the Milk Marketing Scheme. Objection had been taken on the grounds of public health to the reduction of the contribution of producer-retailers, and it had been asked why they should sell milk which had not been subjected to processing. There was a sweeping generalisation implied in Mr. Alexander's argument that the milk supplied by producer-retailers was of inferior quality. He himself thought there were many producer-retailers in the country who did their best and with success to supply decent milk, and if producers as a whole were willing to carry out their obligations in the manner suggested the House could rest assured that it would be in the interests of justice. The Government were not departing in the least from their endeavour to get the quality of the milk supplied by producer-retailers up to a higher standard. There was ample inducement to go forward along the line of progress in supplying clean and wholesome milk.

The motion was agreed to.

HEALTH AND SAFETY IN THE MINES

The House of Commons on July 26th went into Committee of Supply on the Civil Estimates, and discussed a vote to complete the sum necessary for the salaries and expenses of the Mines Department of the Board of Trade.

Capt. CROOKSHANK, Secretary for Mines, said that questions affecting the health and safety of the 780,000 men employed in the mining industry—silicosis, nystagmus, and so on—must be the constant preoccupation of anyone who held his office. Although in certain directions they could note a reduction, they could not be merely complacent in the matter and they must regard it merely as a starting point for further efforts in the future. The Royal Commission on Safety and Health had been labouring very strenuously during the last year and was still sitting. During 1936 790 persons were killed in collieries—the lowest figure on record for a full year's working—and this would have been more impressive but for the Wharncliffe disaster last August. The number of killed came out at 3·36 per 1,000,000 tons raised, or 0·39 per 100,000 man shifts worked.

One aspect was a most bitter disappointment to all. In spite of all that had been done by boys' classes, training grounds, safety officers and propaganda to decrease the accident-rate for boys, this had, compared with the average for the last six years, increased in the past year, together with the number of boys employed. Something was still very wrong somewhere. It was true that boys were young and had high spirits, and they might be rash and careless, but it was incumbent upon others to make them see the difficulties and dangers which they had to face. A great deal more supervision was required and older and more experienced workers as well as officials could do a great deal by saying the right word in due season. In the last six months 29,000 boys were employed; 29 were killed and the number of three days disablement cases was 5942. For the previous six months the figures were 30,000, 24 and 5487 respectively. The safety classes movement had gone on with great strength and had been satisfactorily started in every coal field except South Wales, and recently there had been intensive efforts made by local authorities, coal owners, officials, and workers to coöperate and improve the position. The movement deserved far wider support in South Wales, if for no other reason than that the accident-rate for boys in South Wales was higher than the general average for the country. They had had great support for these safety classes from the Safety First Association,

who had published a very striking poster which had had a wide distribution.

There had been a tremendous increase in the use of protective equipment. Last year the number of hard hats supplied rose by no less than 150,000 and in one particular area, Swansea, there was a very noticeable increase in the use of hard hats from 700 at the beginning of the year to 4425 at the end of the year. There were many pits where the hard hat was universally used and they were now beginning to see the effect. Head injuries were fewer and also less severe; in 1935 there were 6·27 per 100,000 man shifts and had dropped last year to 5·56. The difference in the proportion of those injured for less than two weeks was 49 per cent. for 1936 as compared with 45 per cent. in the previous year, and those injured for over two weeks was 51 per cent. compared with 55 per cent. for the previous year. A report had been presented on the inquiry into the explosion at the Wharncliffe Colliery, which raised an important problem in connexion with stone dust. In this case it was clear that although stone dusting was generally speaking carried on in accordance with the regulations it was ineffective in the roadway in preventing the spread and development of the initial fire damp explosions. He was considering new regulations dealing with stone dust. They had been circulated for preliminary consultation with the usual bodies concerned. He was sorry to say that the figures of those injured last year at 136,000 showed an increase over the previous year of 2000. That showed in addition to what he had said about boys that no one could afford to relax any of the precautions that could be taken. Unfortunately the inspectors' reports showed many cases where accidents might perhaps have been avoided.

He had nothing particular to say about silicosis at the moment. The Medical Research Council had recently requested the Industrial Pulmonary Diseases Committee to start a really comprehensive investigation into silicosis and other pulmonary diseases in South Wales. That was a step to which he had given his strongest support. The Miners' Welfare Fund had assisted financially and the South Wales Miners' Federation had promised to give all the coöperation that it could. Captain Hay, one of the inspectors of mines, had been specially detailed for this work, and spent a lot of his time coöperating with mine and quarry managements in trying to devise the best means of prevention. Under the Factories Bill, quarries and pitbanks of metalliferous mines would be left out of the Factories Act, and would come under Mines and Quarries Act. For this purpose they would be transferred from the Home Office to the Mines Department. Consequently it was necessary to draw up new regulations to deal with this problem, and this was now being done.—Mr. JAMES GRIFFITHS: The Minister said that the Medical Research Council by arrangement with the industry was to investigate the purely medical side of the problem. It will spend most of its time investigating the question of what are the precise diseases from which the men who are disabled are suffering and which are declared to be other than silicosis. Will anything be done at the same time or afterwards to investigate thoroughly the problem of how the disease can be prevented?—Capt. CROOKSHANK: Generally speaking, one needs to know what a thing is before one can prevent it. Captain Hay, as I have said, spends the whole of his time trying to devise methods of prevention.

Mr. PALING said that in view of the boasted progress in the science of mining it seemed incredible that the accident-rate in mines could not be reduced. The figures meant that on the average every man working underground met with an accident once every five years. The number killed approximated to nearly 1000 each year. More efforts should be made to bring down these alarming figures, and if the question of cost were not such a dominating factor he thought that the figures could be brought down.

After further debate, Captain CROOKSHANK, replying to points that had been raised, said that with regard to accidents to boys in 1936 in the group 14 to 16 there were 29 killed and 5932 injured, and in the group 16 and under 18 there were 26 killed and 8247 injured. The numbers employed in the two groups were 29,000 in the first instance and just under 42,000 in the other.

A motion to reduce the vote was negatived, and it was then agreed to.

ERADICATION OF ANIMAL DISEASES

On July 20th in the House of Lords the Agriculture Bill was read a second time. The Earl of FEVERSHAM, moving the reading, said that the measure embodied a long-term programme for the eradication of animal disease, and recast the existing machinery to attain that goal. It was proposed that the local and central veterinary services should be amalgamated into a State veterinary service.—Lord ADDISON expressed the hope that some of the money voted for the eradication of disease would be devoted to research. With very inadequate finance, an Agricultural Research Committee had been established on the lines of the Medical Research Committee, and if, for a long time past, research with animal diseases had been organised and well directed, with pay such as would attract the right young men into it and keep them in it, much further progress would have been made. He hoped that the expenditure under this Bill would not take the form of paying too much for animals found to be diseased, but that it would aim at seeking to remove the causes of disease, which could only be done by large-scale, patient encouragement of research.—Viscount BLEDISLOE said he hoped the time had come when the status of veterinary surgeons in this country would be improved.—Lord CRANWORTH urged that one of the earliest forms of research should be research into the tuberculosis test. He said that everyone connected with cattle knew that the double intradermal test at present in use was utterly unreliable.

The Earl of GLASGOW said that in the more progressive counties in Scotland, where the local authorities had developed a coördinated medical, veterinary, and bacteriological service, they were considerably concerned that the proposals of the Bill might seriously affect not only the veterinary but also the health services generally. In these, the veterinary, officer was only one link in the chain of control, the others being the sanitary inspector and the county medical officer of health. Now it was proposed to break this chain, but, important as animal disease might be, public health was of greater importance.

The Bill was read a second time.

THE BILL IN COMMITTEE

On July 22nd the Bill was considered by the House of Lords in Committee.

The Earl of FEVERSHAM persuaded Lord CRANWORTH to withdraw an amendment similar to that moved in the House of Commons the week before, providing that the chief veterinary officer of the Ministry of Agriculture should supervise the veterinary officers and should be responsible directly to the Minister. The Earl of FEVERSHAM reiterated the Government's objections—namely, that it was hardly proper for Parliament to give statutory instructions to a Minister about the administrative arrangements within his department, and that it would be contrary to precedent for the chief veterinary officer to be responsible for other than his own veterinary work and that of the staff under him. There was, he said, no statutory provision that compelled the Minister of Health to appoint a chief medical officer or said that the latter had to have direct access to the Minister. That was done in accordance with administrative convenience and at the wish of the Minister himself. These things were normally done by conference, and wherever representation to the Minister was necessary there was no doubt that the

chief veterinary officer would have access to him at any time to raise a point for which he was responsible.

The amendment was withdrawn.

On clause 19 Lord SEMPILL moved an amendment to provide that Parliament should have the power to approve or reject arrangements made by the Minister for the purpose of special payments in connexion with the eradication of bovine tuberculosis. Parliament should retain in its own hands the power to veto arrangements of which it did not approve. The Earl of FEVERSHAM persuaded the House to negative this, pointing out that Parliament did not consider this procedure necessary when it passed the Milk Act of 1934, and this was little more than a re-enactment of those provisions. There would be ample opportunity under the existing procedure to bring any points of criticism before the respective Minister and to register dissent from the proposals.

On clause 22, dealing with eradication areas and attested areas, the Earl of GLASGOW moved an amendment to provide that the Minister should consult with the interested local authorities before making Orders; but he withdrew it when the Earl of FEVERSHAM repeated the Minister of Agriculture's assurance in the House of Commons that he would before making any arrangements consult in every case with the local authorities.

On clause 32, which applied the measure to Scotland, Lord ROWALLAN moved an amendment providing for the transfer of the Minister of certain functions of veterinary inspectors of local authorities under the Diseases of Animals Acts, and that the existing functions of veterinary inspectors and officers in Scotland under any of the enactments relating to milk or to dairies should continue to be administered in Scotland as they were at present—namely, by the local authorities. His contention, as well as that of the County Council's Association of Scotland, was that if the three main veterinary duties of the local authorities—the routine veterinary inspection of dairy herds; tuberculin testing and veterinary inspection under the Milk (Special Designations) Order, for Scotland; and diagnostic inquiries into the various scheduled diseases, including tuberculosis—were to be taken away there was no logical reason for leaving them with certain other duties that they had to undertake and for the expense of which they were responsible, but over which they felt they had no control whatever.

Lord SALTOUN in supporting the amendment said that if the object and determination of the Government was to take over the administration of the Diseases of Animals Acts and to put all these veterinary health services on such a basis that they would raise the standard to even greater heights such as Scotland hoped to attain under her own scheme, then as a true partner Scotland was ready to make the sacrifice. But if their health services were going to be shattered in order to ginger up other people to a standard which was below the Scottish standard, they felt that they were asked to make a sacrifice which they should not be asked to make. The Earl of FEVERSHAM said that the Government could not consider the proposal because it would involve very great difficulties in the administration of what was hoped would be a service which was directed essentially to the better eradication of animal diseases generally. Lord ROWALLAN replied that he could not believe that the divided control in the prevention of disease and the diagnosis of disease which they were going to have under this clause was ever going to succeed. While he would withdraw the amendment, he would reserve his right to move another at a later stage.

The Earl of GLASGOW moved to insert a new paragraph, making it the duty of officers appointed by the Minister to furnish any information reasonably required by the local authority or their medical officer of health any disease of animals affecting the health of persons resident in the area of the authority, and to trace the source of infection wherever reasonably practicable.

The Earl of FEVERSHAM assured him, however, that this would be done in the future a great deal more than in the past, and the amendment was withdrawn. This concluded the Committee stage of the Bill.

On July 26th the Agricultural Bill passed the report stage.

THE FACTORIES BILL

In the House of Lords on July 22nd the Report stage of the Factories Bill was concluded.

An amendment, moved by the Earl of MUNSTER, providing that washing facilities should include soap and clean towels or other suitable means of cleaning or drying was agreed to.

The Earl of MUNSTER proposed adding to the clause dealing with the certificate of fitness for employment of young persons, provisions whereby the examining surgeon may direct that the certificate should continue to have effect after the young person has attained the age of 16, but not after 18; also that in a condition requiring re-examination he may vary the certificate or revoke it, when a young person under 16 shall not remain in any employment to which it relates. The amendment was agreed to.

On July 23rd the Bill was read the third time and passed.

NOTES ON CURRENT TOPICS

Local Government Superannuation Bill

In the House of Lords on July 19th the Local Government Superannuation Bill was considered in Committee.

Lord ADDISON moved that the provisions of Subsection (1) of Clause 5 (power to admit employees of statutory undertakers and certain associations) should also apply to voluntary organisations for the provision of maternity and child welfare services and to health visitors and superintendents of welfare centres employed by them.

Viscount GAGE said that the clause as it stood had been accepted by the Government as an amendment in the House of Commons. The Minister of Health had undertaken to explore the possibilities in another matter affecting the superannuation of nurses and health visitors. It might be that consultation with the local authorities and others concerned might throw a different light on the considerations which, as at present envisaged, compelled him to ask that the amendment should not be pressed. Lord ADDISON accordingly withdrew it.

On Clause 12 (Reckoning of contributing and non-contributing service, war service and service of persons indirectly employed) an amendment moved by Viscount GAGE was accepted. It changed the date limiting the extension of an employee's term of service in the forces, that would be taken into account, from Nov. 11th, 1918, to Dec. 31st, 1920, the date agreed to by the Treasury for Civil Service purposes.

On Clause 40 (interpretation) the Earl of KINNOULL moved an amendment to provide that the word "officer" used in the Act should mean any employee directly and regularly employed on duties in any hospital or institute maintained by a local authority, thus bringing council servants as well as council officers into the compulsory superannuation scheme. Viscount GAGE said the object of the amendment was to make the whole staff of any hospital or other municipal institution compulsorily superannuable. That was a fundamental alteration of the principles of the Bill, which limited the obligation imposed upon local authorities to the superannuation of whole-time officers. The amendment was therefore negatived and the Bill passed through Committee.

The Bill was agreed to on Report on July 22nd and it was read a third time on July 27th and passed.

The Finance Bill and the Milk (Amendment) Bill were read a second time.

In the House of Commons on July 23rd the Lords amendments to the Marriage Bill (changed to The Matrimonial Causes Bill) were considered and agreed to. The Lords amendments to the Cinematograph Films (Animals) Bill were also agreed to.

QUESTION TIME

WEDNESDAY, JULY 21ST

Use of Sand and Flint in Sandblasting

Mr. JOEL asked the Home Secretary whether his department proposed to introduce further regulations affecting the use of sand and flint in sandblasting.—Mr. GEOFFREY LLOYD, Under Secretary, Home Office, replied: It was hoped that the substitution of steel shot and grit for siliceous abrasives in sandblasting would be adopted voluntarily, and good progress was made for some time. Recent reports, however, show that this progress is not being maintained, and that there is even a tendency in some quarters to revert to the use of sand. If this attitude continues, there will be no alternative but to propose further regulations to deal with the matter.

Vaccination of Dockyard Employees

Mr. VIANT asked the First Lord of the Admiralty if he was aware that within the past 12 months a large number of building trade operatives had been taken into employment in the Sheerness dockyard; and if he would state the reasons why about six weeks ago a number of them were placed on the hired list and compelled to be revaccinated, an operation which caused some of them a great deal of suffering and anxiety, in view of the fact that a number of them were discharged within a period of five weeks.—Mr. DUFF COOPER replied: According to the Home Dockyard Regulations, all fresh entrants into the dockyard are to be revaccinated or are to produce evidence that they have been successfully vaccinated or revaccinated within the past five years. This rule does not apply to men entered for casual or temporary service. The men concerned were transferred to the hired list after a period of casual employment, in the expectation that continuous employment would be found for them and were accordingly vaccinated. Unfortunately, owing to circumstances which could not be foreseen at the time, this expectation was not fulfilled and 37 men on the hired list have recently been discharged. Of these, eight have subsequently found employment in other departments of Sheerness dockyard.

Mr. LEACH: What is successful vaccination? Does it mean that the patient did not die?—No further answer was given.

THURSDAY, JULY 22ND

Family Budgetary Inquiry

Mr. EDWARD DUNN asked the Minister of Labour when he proposed to set up his family household budgetary inquiry; what would be its terms of reference, and the personnel of the inquiry; and over what area it was proposed to operate.—Mr. ERNEST BROWN replied: It is proposed that about 30,000 working-class households, distributed over all parts of Great Britain, shall be visited and invited to supply budgets, on forms to be provided, giving details of their expenditure in each of four separate weeks, in October, 1937, and in January, April, and July, 1938, respectively. It is hoped that at least 10,000 of these households will supply information in respect of October, 1937, and that the great majority of these will also furnish information for the three later weeks. The inquiry will be organised through the employment exchanges, and it is hoped to obtain the assistance of local committees and of a sufficient number of voluntary helpers, in each district, to undertake the work of visiting the households and collecting the budgets. The inquiry is primarily intended to furnish the data required for a revision of the basis of the official cost-of-living index figures, but it will also provide information required by the health departments in connexion with questions relating to diet and nutrition. In view of the national importance of the inquiry, and of the great social value of the information to be obtained, I trust that the department may rely on the coöperation of those who are asked to supply information or to assist in collecting the budgets.

Mr. LEACH: Will the right hon. gentleman undertake, when the new method of calculation is settled, to make corrections for previous years and publish them?

Mr. BROWN: Preparations are now being made for this exhaustive inquiry, and I am hoping to set the whole thing up in detail in the September number of the Ministry of Labour Gazette.

Report on Night Baking

Mr. BANFIELD asked the Home Secretary whether he had received the report of the committee of inquiry into night baking; what was the reason for the delay in presenting the report; and what action he proposed to take on the matter.—Sir SAMUEL HOARE replied: The report of this Committee was only received on Tuesday of last week and as the hon. Member will be aware was presented to Parliament on the following Thursday. The Committee by a majority reported against any statutory prohibition of night baking. Shortly stated, their view is that while such prohibition would work inequitably among employees and inflict hardship in many cases including a number of bakeries where the work is carried on under the best conditions it would fall far short of providing comprehensive and effective relief to the night baker from the serious social disadvantages under which he labours. The situation as presented in the report obviously demands a much more thorough examination than it has been possible to make within the very short time available, and I am not in a position at present to make any final announcement of the Government's views on the main issue. It is clear, however, that in view of the nature of the report it would not in any case be possible for the Government to entertain any question of legislation on the subject during the present session.

At the end of their report the Committee draw attention to the need for better organisation in this industry and suggest that some recognised body should be set up on which representatives of both sides of the trade might meet together to thresh out their difficulties and devise means for amelioration of conditions. The Government regard this suggestion as a very valuable one and are prepared to take action to give effect to it and I am glad to state that the Minister of Labour will be willing to enter into negotiations with the representatives of the two sides for this purpose without delay. I feel confident that if some satisfactory joint machinery can be established we could look forward to a great improvement in the general conditions of the industry.

Mr. BANFIELD asked the Home Secretary if he was aware that this report has caused great disappointment among both workmen and employers; and in view of that, would he undertake to go very seriously into the report and see whether something could not be done to help those unfortunate people who were condemned to perpetual night work?—Sir SAMUEL HOARE agreed that this report was so important that the Government obviously could not come to a decision in a few days. He undertook to give the report great attention and would announce their decision in due course to the House.

Nursery Schools

Mr. DAY asked the Parliamentary Secretary to the Board of Education the number of proposals at present before his department for the purpose of opening nursery schools in England and Wales; and how many of these proposals were for open-air schools.—Mr. KENNETH LINDSAY replied: Thirty-four proposals for opening nursery schools in England and Wales have been approved in principle by my department, and in a number of these cases final plans have been approved. Nine proposals are at present under consideration. In all these cases it is proposed that the buildings of the schools shall be constructed on open-air lines.

Mr. JENKINS asked the number of nursery schools now in existence in Wales and Monmouthshire; the number of children in average attendance; and the number of teachers employed.—Mr. LINDSAY replied: There are four recognised nursery schools in Wales and Monmouthshire, situated at Brynmawr, Merthyr Tydfil, Rhondda, and Swansea. These schools have accommodation for 360 children in all, and the total number of children in

average attendance during the year ended March 31st, 1937, was 228. Eleven teachers are employed, together with a number of unqualified helpers. A proposal for a second nursery school at Rhondda has been approved in principle and a proposal for the provision of a nursery school at Cardiff is at present under consideration.

Free Meals for School-children

Mr. RIDLEY asked the Parliamentary Secretary to the Board of Education (1) which county councils provided free solid meals for school-children; and (2) which county borough councils did not provide free solid meals for school-children.—Mr. KENNETH LINDSAY replied: (1) The county councils which make some provision of free solid meals for school-children are the councils for Cambridgeshire, Cheshire, Cumberland, Essex, Lancashire, London, Surrey, the West Riding of Yorkshire, and Monmouthshire. (2) The county borough councils which do not provide free solid meals for school-children are the councils for Barrow-in-Furness, Blackpool, Burton-on-Trent, Chester, Darlington, Eastbourne, Exeter, Gloucester, Great Yarmouth, Plymouth, Rotherham, Warrington, West Bromwich, West Hartlepool, and Worcester.

Working Hours of Hospital Nurses

Sir FRANK SANDERSON asked the Minister of Health whether he would consider introducing legislation making it compulsory upon all hospital authorities to introduce an eight-hour day for their nursing staff, in view of the great strain imposed upon them by the existing eleven-hour day and the consequent detrimental effect upon the health of the patients.—Sir KINGSLEY WOOD replied: The question of the working hours of hospital nurses is one of a number of matters affecting the nursing profession which are engaging my attention, and I understand that the associations representing local authorities are in communication with the General Nursing Council regarding certain measures for meeting the situation.

Spirits for Medicinal Purposes

Mr. LEE asked the Chancellor of the Exchequer the quantity of spirits used for medicinal preparations or scientific purposes in respect of which rebate was allowed under Section 4 of the Finance Act, 1918, during the year ended March 31st, 1937.—Col. COLVILLE, Financial Secretary to the Treasury, replied: The quantity of spirits used for medicinal preparations or scientific purposes in respect of which rebate was allowed under Section 4 of the Finance Act, 1918, as amended, during the year ended March 31st, 1937, was 534,000 proof gallons.

Increase in Industrial Accidents

Mr. SHORT asked the Home Secretary whether, since the chief factory inspector's report recorded a large increase in accidents among adults and young persons, he could state what remedial action he proposed to take between now and July, 1938, when the new Factory Act came into operation.—Sir SAMUEL HOARE replied: I much regret the increase in accidents during 1936 as compared with 1935, but as the chief inspector points out in the introduction to his report, the increase in the number of accidents is partly due to increased employment, and statistics over a period of years show that the rate of accidents in proportion to the number of persons in employment is decreasing. I should like to take this further opportunity of emphasising that if any large reduction of accidents is to be obtained, it must be through the exercise of increased care by both employers and workpeople, and that this can best be secured through the development of safety organisations. As the hon. Member is aware, the Factory Department has made every effort in the past to promote such development and it will continue to do so.

Mr. THORNE: Is not the Home Secretary aware that the chief inspector states that thousands of these accidents are preventable; and is he not aware also that a great many of the accidents occur through machinery not being properly protected?

Sir S. HOARE: I accept it as perfectly true that a great many accidents, both in factories and on the roads, are preventable. If only employers and workpeople would pay more attention to precautions there would be many fewer accidents. So far as the factory department of the Home Office are concerned we will do everything in our power to reduce the number.

MONDAY, JULY 26TH

Telephone Calls for Ambulances

Mr. DAY asked the Postmaster-General whether, in view of the fact that persons desiring to make an emergency call for police, fire, or ambulance from a manual telephone exchange call-box had to first insert two pennies in the call-box, he would consider if some method of call could be devised to obviate this disadvantage in case the caller was not in possession of the necessary coins at the time of an emergency.—Major TRYON replied: Emergency calls can be made from all street kiosks, whether on manual or automatic exchanges, without the insertion of any money in the coin box. The call is made by means of an emergency push-button in the case of a kiosk on a manual exchange.

Rehabilitation of Persons Injured in Accidents

Sir ARNOLD WILSON asked the Minister of Health what, if any, steps he had in contemplation to give effect to the recommendation of the inter-departmental committee on the rehabilitation of persons injured by accidents, with particular reference to the treatment of the 200,000 cases of fracture which occurred annually.—Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend has already sent copies of the Interim Report of this Committee to the county and county borough councils in England and Wales, with a covering circular. In this report the Committee express the hope that they will be in a position to present a further report without delay, and my right hon. friend does not propose to take any further general action on this subject until he has received that report.

ETHICAL PHARMACEUTICALS ASSOCIATION.—The second annual meeting of this association was held in London on July 13th, with Mr. A. C. Henry as chairman. It was reported that the executive committee had given consideration to various matters of importance to manufacturers and distributors of ethical pharmaceuticals, the facilities of the association being at all times available to members, including the services of a staff ready to deal with inquiries. During the year the membership has increased from 17 to 22. The vice-chairman is Mr. A. W. Edwards, the hon. treasurer Mr. H. R. Napp, and the secretary Mr. F. G. W. Paige. The association's address is 4, Lloyd's-avenue, London, E.C.3.

SCANDINAVIAN HOSPITALS.—Representatives of Westminster Hospital, including Mr. Rock Carling, the senior surgeon, and Mr. C. M. Power, the secretary, have been visiting Scandinavia as guests of Mr. Bernard Docker, chairman of the hospital. Three days were spent in Stockholm, where Sven Ahlbom, architect of a new general hospital of 1200 beds, which will be ready for occupation in six months, showed them every detail of this new building. Much time was also spent in studying, with the aid of the architect-engineer, Hjalmar Cederstrom, the plans and models of another new hospital of 1500 beds now being built by the municipality. In Sweden the delegates found much to remind them of the plans for the new Westminster Hospital, especially the small wards and the out-patient scheme which will bring out-patients and in-patients together under one administration. The party also visited Helsingfors, Tallin, Danzig, and Copenhagen, where four hospitals were inspected. These included the orthopædic hospital, which Mr. Power considers unequalled—for efficiency, economy of working and facilities for treatment—among the 77 hospitals at home and abroad which he has visited in connexion with the planning and equipment of new Westminster Hospital. The visitors had as their guide Chief-surgeon P. Guildal, adviser to the Danish Board of Health, who took the chief part in planning this great hospital centre. A report on the tour, prepared by Mr. Docker, Mr. Carling, and Mr. Power, will be made available for the use of other British hospitals.

MEDICAL NEWS

University of Oxford

Dr. H. M. Sinclair, Oriel College, has been elected to an official fellowship and tutorship in physiology at Magdalen College.

University of Cambridge

At recent examinations the following candidates were successful :—

D.M.R.E.

Part I.—E. H. Allen, Margaret M. M. Morrison, J. K. Muir, and V. G. Vohra.

Part II.—A. P. Booth, Jean Bouchard, J. A. Brocklebank, C. J. C. Cooke, M. W. Dahab, G. G. Doel, A. M. Evans, William Irwin, Manuel Lederman, C. T. MacCarthy, J. R. M. Martin, Ved Prakash, Harold Pringle, R. R. Rishi, D. C. Virmani, V. G. Vohra, and J. W. Winchester.

University of London

The title of professor of morbid anatomy in the university has been conferred on Dr. G. R. Cameron in respect of the post held by him at University College Hospital medical school. The degree of D.Sc. in applied physiology has been conferred on Dr. G. P. Crowden, and the degree of D.Sc. in physiology on Dr. Marion G. Eggleton, an internal student of University College.

At recent examinations for the post-graduate diploma in bacteriology the following candidates were successful :—

Harry Berry, C. T. Calam, S. P. Gupta, Taliesin Richards, Phyllis M. Rountree, and N. K. Sen.

Applications are invited for the William Julius Mickle fellowship of the value of at least £200, which will be awarded by the senate to the graduate of the University, resident in London, who has done most to advance medical art or science within the last five years. Further information will be found in our advertisement columns.

University of Edinburgh

At a graduation ceremony held on July 21st the honorary degree of doctor of laws was conferred on Dr. Edwin Bramwell, formerly professor of clinical medicine and president of the Royal College of Physicians, Edinburgh. The following degrees and diplomas were also conferred :—

M.D.—*W. M. Arnott, †Frank Ayrey, J. C. Caird, †A. F. Cowan, R. W. Eason, *Alexander Haddow, *T. N. Macgregor, †H. M. D. Shepherd, J. K. Slater, I. D. Sutherland, *Robert Walmsley, and A. M. Watt.

*Awarded gold medal for thesis.
†Commended for thesis.

M.B., Ch.B.—Jerome Adelmann, G. O. Airey, Louis Altman, J. P. Baird, H. A. Barker, Barbara U. Barnetson, M. R. J. Behrendt, H. J. Bell, D. K. Binder, Isabella R. Bishop, T. M'K. Boog-Scott, C. H. Bösenberg, S. O. Bramwell, T. J. Brownlee, K. I. Bruce, Jean M'K. Brunton, J. E. Buck, A. G. S. Calder, Edward Campbell, D. L. Carmichael, Charles Chesner, R. S. Churchward, G. J. Cleland, Joan K. Cunningham, Margaret H. Darling, J. N. Davidson, Selvan Davison, Bernard Diamond, Joseph Dolgin, C. A. P. Donaldson, E. M. Donaldson, J. K. Drummond, D. E. Durran, Louise F. W. Eickhoff, ‡J. R. Frank, J. W. Fraser, Helen M. Gardner, Sidney Gellis, A. M. George, ‡A. D. Gillanders, R. O. Gillhespy, Andrew Graham, L. A. Griffith, Charles Groves, John Guthrie, R. H. Hannah, P. W. Hannay, E. I. B. Harvey, J. W. Heath, A. J. Hogan, R. W. B. Holland, Geoffrey Hollingsworth, John Hotson, H. G. H. Houghton, Sir Eric Hutchison, J. E. Hutton-Mills, ‡James Innes, J. C. J. Ives, W. O. James, ‡R. A. Jamieson, H. C. Jeffrey, R. W. P. Johnson, P. K. Kaufman, G. A. Kelsall, W. G. Kerr, H. M'P. Kilgour, Frank Lake, F. W. Laurie, Deirdre M. Lewis, Elizabeth I. Low, R. B. Lucas, Martin Ludlam, Elizabeth M'Callum, Henrietta R. M'Cree, W. L. MacDonald, G. D. M'Dowall, A. A. MacGibbon, Walter MacGregor, G. D. M'Intosh, R. A. M'Kail, John M'Kee, Alasdair M'Kelvie, D. H. MacKenzie, Agnes P. M'Laren, J. A. M'Laren, I. A. M. Macleod, William Macleod, Ian Macphail, D. A. Macpherson, R. L. Macpherson, Sheila M. L. M'William, V. S. Magnus, G. D. Malcolm, Joy I. G. Matson, H. J. S. Matthew, Harry Meyer, John Millar, J. H. Milligan, J. C. Milne, Humphrey Milne-Redhead, Arabinda Mondal, L. G. Morrison, A. J. G. Newton, Willy Noordenbos, P. T. Northover, R. K. Oag, H. T. Osmond, M. W. Paterson, Niels Pedersen, D. B. Peterkin, G. J. Phillip, A. M. Phillips, Louis Pollack, A. C. Reid, ‡F. H. Robarts, Ethel E. Robertson, R. P. Robertson, H. D. Rosenberg, William Rosenbloom, D. C. Ross, G. I. M. Ross, J. M. H. Ross, J. M. Ross, R. M. Ross, A. P. Russell, K. D. Salzmann, D. L. Savill, G. W. Senter, A. C. Shelford, J. W. Shield, G. F. F. Sinclair, R. S. Smail, A. G. Smith, R. B. Smith, A. St. G. Stephenson, P. D. Stewart, J. D. Sutherland, Rhoda M. Taylor, Robert Troup, W. S. Tulloch, ‡Nina A. B. Verity, Doreen M. Waddington, G. C. Watt, C. C. Wedderburn, D. W. Whyte, A. W. Wilkinson, G. S. M. Wilson, George Winchester, Leila E. Wynter, Austen Young, and R. G. B. Young.

‡ With honours.

D.P.H.—P. G. Barrow, P. L. F. de Livera (in absentia), H. L. de Waal, A. M. Fraser, H. W. Hall, Noor Husain (in absentia), P. L. Lai-Fook, E. A. Lawrence, V. P. M'Donagh, I. F. MacKenzie, V. D. Seevaretnam, Sandanam Sivalingam, G. F. Valentine (in absentia), and Agnes M. M. Hunter.

D.T.M. & H.—K. B. Gore (in absentia), N. S. Mohammed, William Happer, E. L. Lloyd, William Mackie, and William Serle.

Diploma in Psychiatry.—James Carson, N. F. MacKenzie, and J. H. Patterson.

Diploma in Radiology.—J. G. M'Whirter, J. R. Pierre (in absentia), and Thomas Sprunt.

The following awards of prizes were made :—

Cameron prize in practical therapeutics to James Bertram Collip, D.Sc., M.D., F.R.S., professor of biochemistry in McGill University, Montreal, in recognition of his many contributions to endocrine therapy, and in particular his work on the parathyroid gland; Ettles scholarship and Leslie gold medal to F. H. Robarts, M.B.; Scottish Association for Medical Education of Women prize, Nina A. B. Verity, M.B.; Mouat scholarship in the practice of physic, James Innes, M.B.; Buchanan scholarship in midwifery and gynæcology, R. A. Jamieson, M.B.; James Scott scholarship in midwifery and gynæcology, J. R. Frank, M.B.; Conan Doyle prize, Alexander Stadion, M.B.; Dorothy Gilfillan memorial prize, Nina A. B. Verity, M.B.; Beaney prize in anatomy and surgery, R. A. Jamieson, M.B.; Royal Victoria Hospital tuberculosis trust gold medal, Elizabeth M'Callum, M.B.; Annandale gold medal in clinical surgery, James Innes, M.B.; Murdoch Brown silver medal in clinical medicine, J. P. Baird, M.B.; Wightman prize in clinical medicine, James Innes, M.B.; Pattison prize in clinical surgery, A. W. Wilkinson, M.B.; Goodsir memorial fellowship, Alexander Brown, M.B.; Freeland Barbour fellowship, A. I. Pirie, M.B.; Murchison memorial scholarship in clinical medicine, James Innes, M.B.; M'Cosh bursary, J. A. Farfor, M.B.; Gunning Victoria jubilee prize in bacteriology, Scott Thomson, M.B.; Gunning Victoria jubilee prize in pathology, W. M. Arnott, M.D.; Gunning Victoria jubilee prize in therapeutics, Harold Scarborough, M.B.; Gunning Victoria jubilee prize in zoology, C. A. Green, M.B., and Scott Thomson, M.B. (jointly); and Lewis Cameron post-graduate prize, C. A. Green, M.B.

An address was delivered to the new graduates by Prof. Sydney Smith, the promoter.

Royal College of Physicians of Edinburgh

A meeting of the College was held on July 20th, with Dr. W. T. Ritchie, the president, in the chair. Dr. Francis Esmond Reynolds (Glasgow) and Dr. Charles Kelman Robertson (Edinburgh) were elected fellows of the college.

Royal College of Surgeons of Edinburgh

At a recent meeting of the College, with Mr. Henry Wade, the president, in the chair, the following who passed the requisite examinations were admitted to the fellowship :—

Winston Eric Austin, M.D. Manitoba; Warwick Hector Bailey, M.B. Sydney; Duncan Ballantine, M.B. Edin.; Edward Edwin Barnett, M.R.C.S. Eng.; Colattur Raghava Chari, M.B. Madras; Martin Melvin Cruickshank, M.D. Aberd.; Robert Henry Dale, M.R.C.S. Eng.; Walter Knee House, M.D. Manitoba; John Harkness, L.R.C.P. Edin.; Agnes Jane Herring, M.D. St. Andrews; Monte Jackson, M.R.C.S. Eng.; Karl Gerald Wilson James, M.R.C.S. Eng.; Hayman Isaac Maister, M.R.C.S. Eng.; Archibald Robert Alexander Marshall, M.B. N.Z.; Malcolm Lionel Robert Morley, M.B. N.Z.; Meredith Conley Moore, M.B. N.Z.; William Fife McGladdery, M.R.C.S. Eng.; Margaret Fitz-Hugh Procter, M.B. Liverp.; James Clifford Samis, M.D. Kingston; George Ian Scott, M.B. Edin.; Ivan Hamilton Smith, M.D. Ontario; and Samuel Lockington Strange, M.B. Liverp.

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery.—P. A. Dixon, Univ. of Liverp.; O. I. Green, Univ. of Oxford and Guy's Hosp.; C. C. B. Guest, Univ. of Sheff.; B. A. Hoogewerf, Madras and King's Coll. Hosp.; G. Howell, Welsh National School of Medicine; E. S. Reed, Univ. of Camb. and St. Mary's Hosp.; and O. Rochlin, Univ. of Melb. and Lond. Hosp.

Medicine.—I. W. Claiman, Univ. of Manch.; G. K. Coombes, King's Coll. Hosp.; P. H. Hay-Heddle, Westminster Hosp.; K. J. Higham, Univ. of Durh.; B. A. Hoogewerf, Madras and King's Coll. Hosp.; J. Meynell, Univ. of Manch.; and J. N. Roberts, Univ. of Camb. and Charing Cross Hosp.

Forensic Medicine.—I. W. Claiman, Univ. of Manch.; P. H. Hay-Heddle, Westminster Hosp.; K. J. Higham, Univ. of Durh.; B. A. Hoogewerf, Madras and King's Coll. Hosp.; J. Meynell, Univ. of Manch.; and J. N. Roberts, Univ. of Camb. and Charing Cross Hosp.

Midwifery.—M. G. Braham, Univ. of Leeds; O. D. Gilmore, Westminster Hosp.; L. Gottlieb, Univ. of Frankfort and Lond. Hosp.; K. J. Higham, Univ. of Durh.; G. S. Parker, Univ. of Manch.; E. F. G. Stewart and C. Webb, St. Bart.'s Hosp.

J. Meynell and J. N. Roberts, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery.

British College of Obstetricians and Gynæcologists

At the quarterly meeting of the council, held on July 24th, Sir Ewen Maclean was re-elected president; Profs. R. W. Johnstone and M. H. Phillips were elected vice-presidents; Mr. Eardley Holland, hon. treasurer; Sir Comyns Berkeley, hon. appeal treasurer; Prof. W. Fletcher Shaw, hon. secretary; and Mr. Frederick Roques, hon librarian.

The following were admitted by the president:—

Fellowship.—Sir Hangaldas Vijbhucandas Mehta (Bombay), *Doris C. Gordon (Stratford, New Zealand), *Stephen Langavin (Montreal), and *J. A. Hopkins (Melbourne).

Membership.—*A. L. Gilbey (Portsmouth), J. R. McArthur (Toronto), W. L. Maccormac (London), W. I. C. Morris (Ayr), D. C. Racker (Manchester), and S. W. Wright (Newcastle, Staffs).

* In absentia.

The following were elected to the membership:—

M. C. Albuquerque (Bangalore), Eric Bailache (Melbourne), S. C. Bose (Calcutta), Marjorie R. E. Boyd (Dublin), F. J. Burke (Liverpool), Hugh Callagher (Melbourne), Isabella D. Cameron (London), Henry Canwarden (London), Mrs. D. J. P. Dadabhoy (Bombay), J. P. Dutt (Calcutta), Edith Ghosh (Calcutta), V. B. Gokhale (Belgaum, India), H. F. P. Grafton (Hamilton, Canada), C. J. K. Hamilton (Liverpool), M. R. W. Hart (Madras), A. F. Hollinrake (Hamilton, Canada), Meher Homji (Bombay), John Howkins (London), J. G. H. Ince (London), Mary John (India), J. W. Johnstone (Korumburra, Australia), R. A. Logan (Nagpur, India), Poonen Lukese (Travancore), Anna P. Martin, L. de Menesies (Nagpur), E. A. Menon (Waltair, India), D. N. Mitra (Bengal), Mrs. Monohan (Madras), Una Morton (Agra), Bamendas Mukherjee and Herbert Murray (Calcutta), A. N. Palit (Bihar, India), N. A. Purandhare (Bombay), P. W. S. Riley (New Zealand), Akhilanath Sarkar (Patna), M. N. Sarkar (Calcutta), G. A. Simpson (Sernia, Canada), B. H. Singh (Bengal), A. B. Stenhouse (London), R. K. K. Tampan (Edgmore, India), P. Venkatagri (Madras), Margaret Venters (Manchester), and R. J. Wotherspoon (Glasgow).

Post-graduate Lectures on Ophthalmology

A course of six lectures on some aspects of medical ophthalmology will be given in the Tennent Memorial Institute of Ophthalmology, Church-street, Glasgow, on the following dates: from Sept. 7th to Oct. 12th at 4.30 P.M. The first two lectures will be given by Prof. A. J. Ballantyne on hypertension, vascular sclerosis and renal disease. Dr. John Marshall will speak on diabetes, and Dr. I. Chesar Michaelson on diseases of the central nervous system. Further information may be had from Prof. Ballantyne, Department of Ophthalmology, University, Glasgow.

Cheap Milk: A Deputation to the Minister

Sir Kingsley Wood, the Minister of Health, received on Tuesday a deputation from the Children's Minimum Council to urge that milk should be provided for nursing and expectant mothers and children under school age of working-class families at 1½*d.* a pint, and that the milk should be free where the family income fell below a scale to be determined by the Ministry. The deputation proposed that the cheapened supply asked for should be secured by diverting some of the milk now sold for manufacturing purposes at about 5½*d.* a gallon. Sir Kingsley Wood said he was in full agreement with the main objects of the deputation. The Government's general policy was to ensure a maximum supply of milk for the consumer consistent with a reasonable remuneration to the producer, to improve the purity of the milk-supply and also to continue and where practicable extend their policy of increased consumption of milk among those sections of the population for whom it was of particular value. Over 2½ million children were participating in the milk-in-schools scheme and local authorities had lately been requested to review their arrangements for the supply of milk and food to expectant and nursing mothers and young children. They were responding to these suggestions and a number were already extending their provisions. At the beginning of 1937, 406 of the 418 maternity and child welfare authorities in England and Wales were supplying milk either free or at less than cost price in necessitous cases to expectant mothers, 406 to nursing mothers and 404 to children under five years of age. The question of further schemes for the supply of milk either free or at a reduced price for mothers and young children had been under active consideration by the Government in connexion with their long-term milk policy. He could not anticipate any statement that would be made to Parliament, but he could say that the Minister of Agriculture still hoped it would be possible to make a statement before Parliament rose for the recess.

University of Manchester

The Professor Tom Jones memorial surgical fellowship has been awarded to Dr. T. S. B. Kelly.

University College Hospital Medical School

The Bilton Pollard fellowship has been awarded to Mr. Mark Coleman.

Central Midwives Board

The offices of the Board are now at 23, Great Peter-street, Westminster, London, S.W.1. (Telephone: Victoria 2410.)

St. Mary's Hospital

A dental and research laboratory is to be opened at this hospital through the generosity of Mr. E. W. Meyerstein.

Royal College of Physicians of London

The College will be closed from Monday, August 2nd, to Saturday, Sept. 11th, both days inclusive.

Royal Free Hospital

The A. M. Bird post-graduate scholarship in pathology has been awarded to Dr. Mary Barber, and the Mabel Webb and A. M. Bird research scholarship to Dr. Marjorie V. Sudds.

Lectures on Fractures

A post-graduate course on the modern treatment of fractures will be held at the Royal Infirmary, Bristol, from August 16th to 20th. Demonstrations and lectures will be given by Prof. E. W. Hey Groves, Mr. K. H. Pridie, and Mr. F. W. Willway. Further information may be had from the director of post-graduate studies, University of Bristol, Canynge Hall, Whatley-road, Bristol, 8.

Post-graduate Course in Paris

A post-graduate course on surgical technique in relation to the motor system (bones and joints, &c.) will be held in Paris in the medical school of the University from Oct. 11th to 28th. Prof. Ombrédanne and Prof. Paul Mathieu will give demonstrations and will operate. Further information may be had from the secretary of the Faculté de Médecine.

Guy's Hospital

On July 23rd a portrait of Lord Nuffield was presented to Nuffield House, the building for paying patients which he has given to this hospital. The portrait was the gift of the artist, Mrs. Beatrice Enes.

East Surrey Hospital, Redhill

Princess Alice, Countess of Athlone, has consented to open the new nurses' home at this hospital on Oct. 27th. The total cost of the home is estimated at £13,000 and to meet this over £8000 has so far been subscribed.

Middlesex Hospital

The annual prize-giving ceremony of this medical school was held on July 21st. Prince Arthur of Connaught, chairman of the hospital and medical school, presided, and Lord Dawson of Penn presented the prizes and medals to the students and nurses. Dr. H. E. A. Boldero, the dean, announced that Mr. Edward Meyerstein had presented to the school a new athletic ground at Chislehurst. Lord Dawson in addressing the students said that this gift would enable the students not only to enjoy recreation but to put themselves in the forefront of a fitter youth. No one needed to be fit more than did doctors and nurses. Medicine demanded the hardest work and gave the fullest life of any calling in the world. Their minds could never be dull in medicine, because they lived in a land of knowledge in which they were always trying to add something from the uncharted land all round. The ancillary services, of which the exponents in the Middlesex Hospital medical school were outstanding in repute, were an invaluable aid, but they must be careful to hold the balance between those services and clinical medicine. The dean also reported that the medical school had received from an anonymous donor a sum to create a Rudyard Kipling fund to help students or recently qualified Middlesex men who might otherwise have to abandon a medical career. Dr. G. E. Beaumont, physician to the hospital, delivered an address entitled The Breath of Life.

Appointments

BURBURY, WINIFRED M., M.B. Lond., D.P.M., Part-time Psychiatrist to the Manchester City Council.

GILMOUR, MARY D., M.B. Glasg., Director of the Marie Curie Hospital, London.

GREVILLE, G. D., M.A. Camb., Research Biochemist at Runwell Hospital, Essex.

HILL, H. GARDINER, M.D. Camb., F.R.C.P. Lond., Physician to St. Thomas's Hospital.

JONES, EVAN, M.D., M.R.C.P. Lond., Physician-in-charge of Out-patients at St. Thomas's Hospital.

Ancoats Hospital, Manchester.—The following appointments are announced:—

STEWART, T. S., M.B. Manch., House Surgeon to the Ear, Nose and Throat Dept.;

DUNN, R. W., M.R.C.S. Eng., Casualty Officer;

BARLOW, T. E., M.R.C.S. Eng., House Surgeon to orthopædic department; and

BACON, W. B., M.B. Manch., Assistant Surgical Officer to orthopædic department.

Certifying Surgeons under the Factory and Workshop Acts: Dr. C. E. MCCAUSLAND (Folkestone District, Kent); Dr. K. A. MACKENZIE (Milborne Port District, Somerset); Dr. T. A. BROWN (Plympton District, Devon); Dr. C. MACKENZIE (Invergordon District, Ross-shire); Dr. W. C. LATHAM (Newton-le-Willows District, Lancaster); and Dr. R. M. MCMINN (Lydbrook District, Gloucester).

Vacancies

For further information refer to the advertisement columns

Aberdeen Maternity Hosp.—Sen. R.M.O. and Reg., £200.

Aberdeen, Royal Infirmary.—Surg. Reg., £200.

Adelaide, Institute of Medical Science.—Neale Research Pathologist, £900.

All Saints' Hosp., Austral-street, S.E.—Res. H.S., at rate of £100.

Bath, Royal United Hosp.—Two H.S.'s to Spec. Depts., each £150.

Bedford County Hosp.—H.S., at rate of £150.

Belfast, Royal Maternity Hosp.—Two R.M.O.'s, each at rate of £52.

Birmingham City.—Asst. M.O. for Maternity and Child Welfare, £500.

Birmingham, Selly Oak Hosp.—Res. Ear, Nose, and Throat Surgeon. Also Res. Gynæcol. and Obstetrician, each £700.

Bradford City.—Asst. City Pathologist, £500.

Bradford Royal Eye and Ear Hosp.—H.S., £180.

Brighton and Hove Provident Dental Hospital, 7, Buckingham-road.—Anæsthetist.

Brighton, Royal Alexandra Hosp. for Sick Children.—H.P., £120.

Brighton, Royal Sussex County Hosp.—Hon. Clin. Asst. to Early Nervous Disorders Dept.

Brighton, Sussex Maternity and Women's Hosp.—Res. H.S., £130.

Bristol General Hosp.—H.S., at rate of £80.

Bristol Royal Infirmary, &c.—Radio-Diagnostician, £500.

Cardiff, King Edward VII Welsh National Memorial Association. Asst. Res. M.O. for North Wales and for South Wales Sanatorium, each £200.

Cardiff, Welsh National School of Medicine.—Jun. Asst. in Surg. Unit, £450.

Carlisle City.—Asst. M.O. for Maternity and Child Welfare, £600.

Central London Ophthalmic Hosp., Judd-street, W.C.—Asst. Anæsthetists.

Cheshire Joint Sanatorium.—Res. H.P., £250.

Coventry, City Isolation Hospital.—Res. M.O., £660.

Dover Borough.—Part-time Medical Inspector of Aliens, at rate of £400.

East Ham Memorial Hosp., Shrewsbury-road, E.—H.P., at rate of £150.

Exeter, Princess Elizabeth Orthopædic Hospital.—Res. H.S., at rate of £150.

Glasgow University.—Lecturer in Pathological Biochemistry.

Grimsby and District Hosp.—H.P., at rate of £150.

Hertfordshire C.C.—H.S. for County Institution, £175.

Hull Municipal Maternity Home and Infants' Hosp.—Jun. Res. M.O., at rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S., £144.

Keighley and District Victoria Hosp.—Second Res. M.O., at rate of £120.

Kettering and District General Hosp.—H.P., at rate of £150.

Kidderminster and District General Hosp.—Jun. H.S., £100.

King Edward Memorial Hosp., Ealing.—H.S. to Spec. Depts. Also Cas. H.S., each at rate of £150.

Lancashire Mental Hospitals Board.—Two Med. Supts., each £950.

Liverpool and District Hosp. for Diseases of the Heart.—H.P., £100.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Jun. Asst. to Med. Supt., £225.

Manchester, Crumpsall Hosp.—Res. Asst. M.O., at rate of £200.

Manchester Ear Hosp., Grosvenor-square, All Saints.—Res. H.S., £120.

Manchester Northern Hosp., Cheetham Hill-road.—Res. Surg. O., £150.

Manchester Royal Children's Hosp., Pendlebury.—Asst. M.O. and Res. M.O., each at rate of £150. Also Res. H.S., at rate of £100.

Manchester Royal Infirmary.—Asst. M.O. to Massage and Electrical Dept., £100.

Metropolitan Hosp., Kingsland-road, E.—Cas. O. and Res. Anæsthetist, £100.

Middlesbrough, North Riding Infirmary.—Third H.S., at rate of £140.

Mount Vernon Hosp., Northwood.—Asst. H.S., £150.

Northampton County Borough Education Committee.—Asst. School Dentist, £450.

Northampton General Hosp.—Cas. O., at rate of £150.

Oldham, Municipal Hosp.—Res. Asst. M.O., at rate of £200.

Plymouth, Prince of Wales's Hosp., Greenbank-road.—Res. Anæsthetist and H.S. to Spec. Depts., at rate of £120.

Preston and County Lancaster Royal Infirmary.—H.S. to Eye, Ear, Nose and Throat Dept., at rate of £150.

Princess Louise Kensington Hosp. for Children, St. Quintin-avenue, W.—H.S., at rate of £120–£150.

Queen's Hosp. for Children, Hackney-road, E.—Cas. O., at rate of £100.

Radcliffe Infirmary.—Records Officer, £350 to £400.

Rochdale, Birch Hill Hosp.—Jun. Res. M.O., at rate of £225.

Rochdale Infirmary and Dispensary.—H.P., also Second H.S., each at rate of £150.

***Rotherham Hosp.*—H.S. for Ophth. and Ear, Nose, and Throat Depts., £150.**

Royal Northern Hosp., Holloway, N.—H.P. and Obstet. H.S., each at rate of £70.

Ryde, Royal Isle of Wight County Hospital.—Hon. Surgeon to Ear, Nose and Throat Dept., Hon. Pathologist, also Jun. H.S., £120.

St. John's Hosp., Lewisham, S.E.—Res. H.P., at rate of £100. Also Med. Reg. to Out-patient Dept., 50 guineas.

Salvation Army, Lower Clapton-road, E.—Hon. Physician to Mothers' Hospital.

***Sheffield Children's Hosp.*—H.S., £100.**

Sheffield Royal Infirmary.—Cas. O., at rate of £150.

Shoreditch Metropolitan Borough.—M.O.H., £1000.

Southampton Children's Hosp. and Dispensary for Women.—Res. M.O., at rate of £150.

Southampton, Royal South Hants and Southampton Hosp.—Cas. O., and Res. Anæsthetist and H.S. to Ear, Nose, and Throat Dept., each at rate of £150.

Southend-on-Sea Infectious Diseases Hosp.—Med. Supt., £750.

Stoke-on-Trent, Longton Hosp.—H.S., £160.

Sunderland County Borough.—Asst. School M.O., £600.

Swansea County Borough Mental Hosp.—Asst. M.O., £400.

Swansea General and Eye Hospital.—H.S., at rate of £150.

Taunton and Somerset Hosp.—Sen. R.M.O., at rate of £200.

University College, W.C.—Galton Laboratory Asst. Serologist, £350.

University of London, W.C.—William Julius Pickle Fellowship, £200.

Ventnor, Royal National Hosp. for Consumption, &c.—Second Asst. Res. M.O., at rate of £200.

Wakefield, Clayton Hosp.—Two H.S.'s, each £200.

Watford and District Peace Memorial Hosp.—H.S., at rate of £150.

Weir Hosp., Grove-road, Balham, S.W.—Sen. and Jun. Res. M.O.'s, £250 and £150 respectively.

West End Hosp. for Nervous Diseases, 73, Welbeck-street, W.—Hon. Psychotherapist.

***Weston-super-Mare General Hosp.*—Res. H.P., £150.**

Wimbledon Hosp., Thurstan-road, S.W.—Res. M.O., at rate of £150.

Worcestershire Mental Hosp., Barnsley Hall.—Second Asst. M.O. £350.

Births, Marriages, and Deaths

BIRTHS

ANDERSON.—On July 23rd, the wife of Dr. James Mitchell Anderson, of a daughter.

FREEMAN.—On July 17th, at Gloucester, the wife of Dr. John David Freeman, of a daughter.

MILLER.—On July 23rd, at Lower Clapton-road, London, E., the wife of Dr. Edin Miller, of a daughter.

PENDRILL CHARLES.—On July 21st, at Bentinck-street, the wife of Dr. Gilbert Pendrill Charles, of a son.

MARRIAGES

LYTTON—PICKEN.—On July 23rd, at St. Paul's, Herne Hill, S.E., Dr. Leslie Lytton, of Portsmouth, to Jean, elder daughter of Prof. and Mrs. Ralph Picken, Cardiff.

DEATHS

FFRENCH.—On July 25th, Ernest George Ffrench, M.D., F.R.C.S. Edin., Lt.-Col. R.A.M.C. (retd.), of Harley-street, in his 61st year.

MURRAY.—On July 21st, at Llandrindod Wells, John Murray, O.B.E., M.B., C.M. Glasg.

WADD.—On July 27th, 1937, at 14, Glenmore House, Richmond Hill, Surrey, Harry Randall Wadd, M.R.C.S., L.R.C.P. Lond. Cremation at Golders Green to-day, Friday, July 30th, 1937, at 12.30 P.M.

WALKER.—On July 18th, at Manchester, Edward J. Walker, M.D. Q.U. Belf., of Edale, Derbyshire, and late of Manchester, and Chapel-en-le-Frith, aged 75.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.

WEDNESDAY, August 4th.—3 P.M., clinical and pathological conference (surgical).

THURSDAY.—3 P.M., gynæcological endocrinology.

FRIDAY.—3 P.M., clinical and pathological conference (obstetrics and gynæcology).

Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

NOTES, COMMENTS, AND ABSTRACTS

A CLOSE SHAVE

IT has been affirmed, on meagre authority, that man's earliest attempts at shaving consisted in rubbing his face vigorously with pumice stone. From this practice to the use of the modern safety-razor is a far cry almost justifying belief in progress. Nevertheless, the sensitive-skinned will be reluctant to admit that shaving technique has, as yet, reached anything like perfection, for, whereas to the thick-skinned shaving may be no worse than a bore, to the sensitive it is little better than a torture. L. Hollander and E. J. Casselman have recorded their observations made in a shaving clinic established at Mellon Institute in 1931 (*J. Amer. med. Ass.* July 10th, 1937, p. 95). Their staff consisted of 10 to 15 experimental shavers, all scientists who, under the direction of Casselman, daily shaved a group of 31 victims of whom 20 were blond and 11 brunette. Five blonds and 6 brunettes had unusually coarse beards, while 9 blonds and 3 brunettes had rather light growths; but it was found that skin sensitivity was not confined to those with dense beards. Dull blades, incompletely softened hairs, and incorrect shaving angles were found to be the main causes of bad shaving. The shaving angle is that formed by a line passing through the central plane of the blade near its edge and a plane passing through the edge and tangent to the guard bar. To obtain the most effective shaving angle an alteration of a few degrees was sometimes necessary. Other subsidiary causes of bad shaving were insufficient lubrication of the blade, lack of a stiff supporting medium for the hair-shaft, and failure to protect the skin from trauma or to make use of the antiseptic action of soaps.

To be shaved successfully, the face should first be thoroughly washed with hot water and soap and rinsed. One's favourite shaving soap or cream should then be thoroughly rubbed in with plenty of hot water. These two operations should occupy from 2½ to 3 minutes. The razor should be wetted before use and both razor and face should be kept wet during the shave. The most difficult parts to shave, the upper lip and the central portion of the chin, should be left till last to allow them longer contact with water. At the end of the shave a lotion or post-shaving preparation of some kind can be used after all soap has been thoroughly rinsed off the face. Shaving, in addition to removing hair, removes also a fair quantity of epidermis. After-care of the face includes the control of bleeding, an antiseptic and astringent action on the skin, and the replacement of the protective covering lost by the removal of sebum and epidermis. Bismuth subgallate, a powder, is recommended as the best styptic, ethyl alcohol in various strengths with 4 per cent. salicylic acid as an antiseptic, and talcum powder as a protective covering. These measures are to be commended to the sensitive-skinned who should, however, bear in mind that, if they are made comfortable thereby, they will be robbed of what may well be their favourite topic of conversation.

A PHYSICIAN'S VERSES

Dr. T. Wilson Parry's new book of poems [1] reveals him both as doctor and antiquarian. It takes its name from the first section, entitled Immortal Names, and this comprises sixteen sonnets on great subjects from Æsculapius to Joseph Lister, informed by knowledge and inspired by an ideal. For medicine to Dr. Parry is more than a trade, more than a profession; and in this book he presents a continuing tradition of greatness through service to mankind. This is the fruit of his travels into history, but he is also a geographical traveller, and another group of sonnets provides some charming word pictures of the European scene. The third group, entitled The Quest Eternal, records travels in the mind, while the fourth and fifth are mostly the result of travels in fancy, some of them pleasantly reminiscent of Dr. Parry's previous book, "Dream Fairies." It is perhaps, indeed, in his lyric mood that his verses are happiest, and though the series of sonnets of history and landscape have memorable lines it is inevitable that they should sometimes lack the spontaneity of his best. As idealist and poet Dr. Parry is naturally an individualist, and when he descends to political verse we find him looking forward without enthusiasm to the time when there are no more family physicians to look after their patients: "To the Borough Health Department they are now obliged to 'phone, For a surgeon or physician who to them is quite unknown." Let us hope things will never be quite as bad as that!

[1] Immortal Names and other Poems. By T. Wilson Parry, M.A., M.D. Cantab., F.S.A. London: The Mitre Press. 1937. Pp. 122. 5s.

AN APPEAL FOR MEDICAL BOOKS

Dr. HOPE TRANT, acting medical officer of the Mwenzo Mission Hospital (P.O. Isoka), Northern Rhodesia, writes: "Among your readers there are probably many who take a pride in keeping their medical libraries up to date, or who for various reasons must keep abreast of the latest developments. May I ask these, when they are replacing their older editions with newer ones, to be so kind as to put aside the older ones for us?

"The Livingstonia Mission, to which this hospital belongs, has a chain of native hospitals in Northern Rhodesia and Nyasaland. They are run on pitifully small grants ranging from £40–£200 per annum, and, as the medical missionaries' salaries are also very small, there is little or no money for the purchase of new medical books. On isolated stations, medical works are our consultants and guides, and if these are antiquated and out of date, so will our practice become.

"If therefore any of your readers would be kind enough to send us, by book post to the above address, medical books of any kind, but preferably not older than 1926, they would earn our heartfelt thanks. Should duplicates be received, they will be passed on to another station."

THE Academic Depôt (Mappin House, 156, Oxford-street, London, W.1) have sent us samples of their surgical hose which are made from Lastex Yarn. The stockings are seamless and fully fashioned and in appearance are not unlike closely woven lisle stockings. The elastic core of the yarn however gives them unusual resilience, so that they can be used to exert continuous firm pressure on varicose veins. The makers claim that the hose are invisible under ordinary silk stockings, that they are cool and ventilated, and that they will stand up to repeated washing. They are supplied in two styles (knee length and full length) and each style may be had in three stock sizes. They will also be made to measure. The patented heel of loosely woven cotton thread is said to ensure a correct anatomical support, and it should certainly add to the comfort of the stocking.

INDEX TO "THE LANCET," VOL. I, 1937

THE Index and Title-page of Vol. I, 1937, which was completed with the issue of June 26th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.